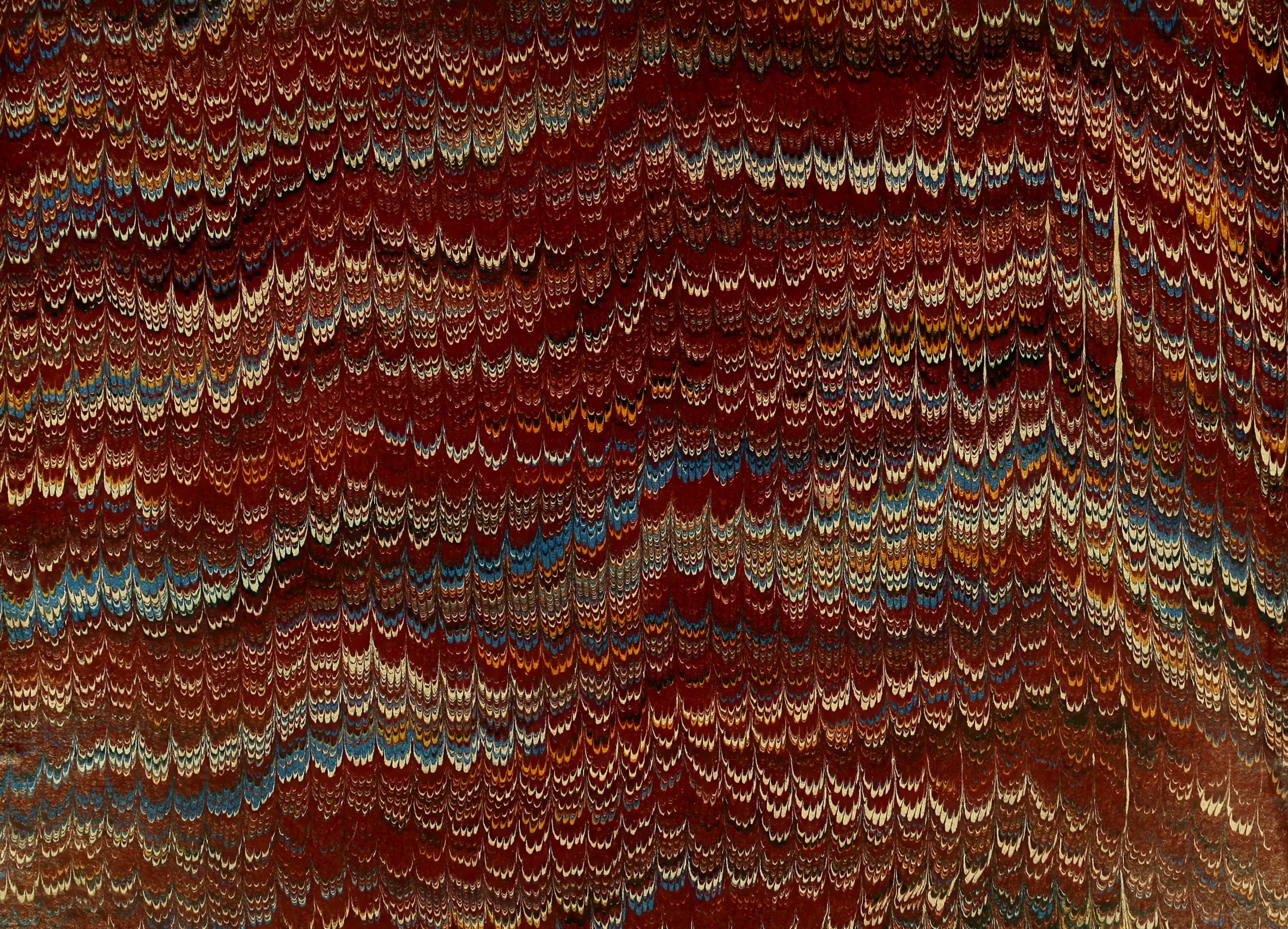
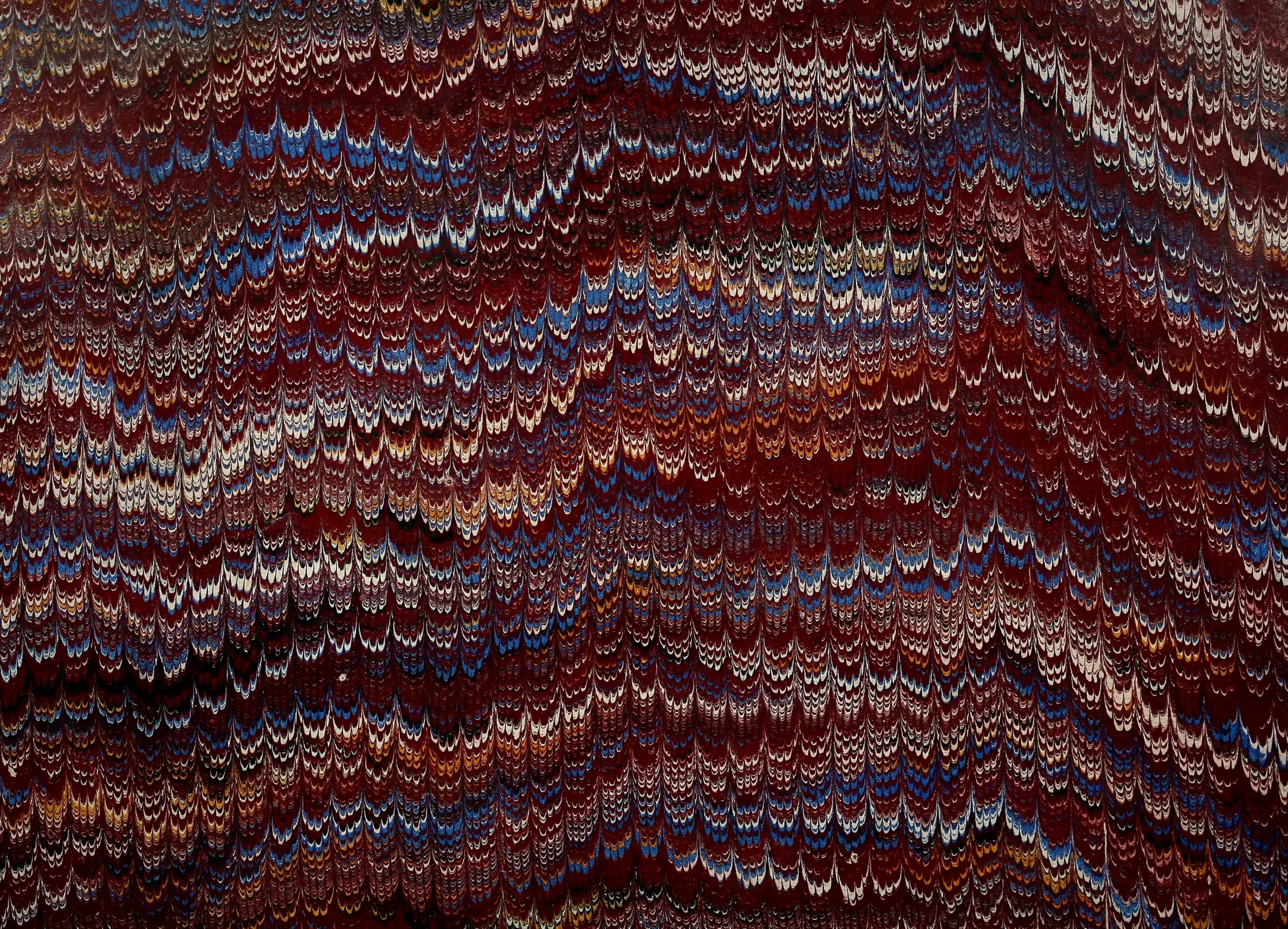




A HISTORY

OF

THE BIRDS OF EUROPE,

INCLUDING ALL THE SPECIES INHABITING THE

WESTERN PALÆARCTIC REGION.

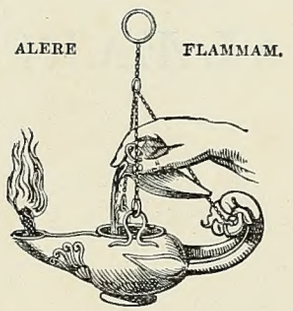
BY

H. E. DRESSER, F.L.S., F.Z.S., ETC.

VOLUME VI.

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A HISTORY OF THE BIRDS OF EUROPE



BY

HENRY E. DRESSER, F.L.S., F.Z.S., ETC.

VOLUME VI.

CONTAINING:—

FALCONIDÆ (from Pernis). PELECANIDÆ. ARDEIDÆ.
CICONIIDÆ. PLATALEIDÆ. IBIDÆ. PHŒNICOPTERIDÆ.
ANATIDÆ.

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Genus PERNIS.

Accipiter apud Brisson, Orn. i. p. 410 (1760).
Falco apud Linnæus, Syst. Nat. i. p. 130 (1766).
Buteo apud Vieillot, Nouv. Dict. iv. p. 479 (1816).
Aquila apud Koch, Baier. Zool. i. p. 115 (1816).
Pernis, Cuvier, Règne Anim. i. p. 322 (1817).
Pterochalinus apud Gloger, fide Sharpe, Cat. Accipitr. Brit. Mus. p. 343 (1874).

The Honey-Buzzards, of which three species are known, inhabit the Palæarctic, Ethiopian, and Oriental Regions, one species only being found in the Western Palæarctic Region. They are somewhat heavy and slow in their movements, and quite as destitute of courage as the common Buzzard: thus they do not pursue and catch birds and mammals, but feed on reptiles and insects, especially the latter; and they are said also to plunder other birds' nests of their contents, both eggs and young birds. They feed with avidity on the larvæ of wasps and bees, and will dig out the nests and pick the grubs out, devouring also the honey.

They breed rather late in the season, either making use of a deserted nest or else constructing one for themselves, and invariably garnish it with green leaves. Their eggs are roundish, and usually very richly coloured, being so closely blotched on a yellowish-brown ground with reddish brown or fox-red as to appear almost entirely of those colours.

As a rule, they are silent birds, only occasionally uttering a shrill cry as they circle over head at a considerable altitude.

Pernis apivorus, the type of the genus, has the bill rather weak, decurved from the base, cere large, cutting-edge of the upper mandible nearly straight; nostrils oblong, oblique, lores covered with small scale-like feathers; wings long and broad, the first quill shorter than the sixth, the second about equal to the fifth, the third and fourth longest; tail long, nearly even; tarsus short, feathered on the upper part and reticulated on the lower half; toes moderately strong, claws strong, slightly curved, acute.

An American species, the only representative of the Nearctic and Neotropical genus *Elanoides*, *Elanoides furcatus* (L.), has been inserted in the British list; but it seems to me that it is rather premature to include it, and until I can examine an undoubted British-killed example I shall continue to doubt its occurrence within the limits of the Western Palæarctic Region. According to Professor Newton (in Yarr. Brit. B. i. pp. 103–105) one was recorded by the late Dr. Walker as having occurred at Ballachulish in 1772, and a second example is said by the late Mr. Fothergill to have been caught on the 6th September 1805, near Hawes, in Wensleydale, Yorkshire, but it subsequently escaped. Four more occurrences are on record, but they rest on insufficient evidence.



J.G. Keulemans, del. Mintern Bros. imp

HONEY-BUZZARD.
IMMATURE.



HONEY BUZZARD.
PERNIS APIVORUS



HONEY BUZZARD.
1 YOUNG VARIETY. 2 ♂ IMMATURE.

PERNIS APIVORUS.

(HONEY-BUZZARD.)

Accipiter buteo apivorus, Briss. Orn. i. p. 410 (1760).
Falco apivorus, Linn. Syst. Nat. i. p. 130 (1766).
La Bondrée, Buff. Hist. Nat. Ois. i. p. 208 (1770).
Falco dubius, Sparrm. Mus. Carls. i. pl. 26 (1786).
Falco incertus, Lath. Ind. Orn. i. p. 32 (1790)
Le Tachard, Levaill. Ois. d'Afr. i. pl. 19 (1799).
Falco tachardus, Daud. Traité d'Orn. ii. p. 164 (1800, ex Lev.).
Falco polioryncbos, Bechst. Orn. Taschenb. i. p. 19, pls. 3, 4, 5 (1802).
Accipiter lacertarius, Pall. Zoogr. Rosso-As. i. p. 359 (1811).
Buteo tachardus (Daud.), Vieill. Nouv. Dict. iv. p. 479 (1816).
Buteo apivorus (L.), Vieill. tom. cit. p. 479 (1816).
Aquila variabilis, Koch, Syst. Baier. Zool. p. 115 (1816).
Pernis, Cuv. (*Falco apivorus*, Linn.), Règne Anim. p. 322 (1817).
Pernis communis, Less. Traité d'Orn. p. 75 (1831).
Pernis apium, C. L. Brehm, Vög. Deutschl. p. 46 (1831).
Pernis vesparum, C. L. Brehm, op. cit. p. 47 (1831).
Pernis apivora, C. L. Brehm, Vogelfang, p. 14 (1855).
Pernis platyura, C. L. Brehm, ut suprà (1855).
Pernis apivorus major, A. E. Brehm, Verz. Samml. C. L. Brehm, p. i (1866).
Pernis apivorus planiceps, A. E. Brehm, ut suprà (1866).
Pernis apivorus apium, A. E. Brehm, ut suprà (1866).
Pernis apivorus vesparum, A. E. Brehm, ut suprà (1866).
Pernis tachardus, G. R. Gray, Hand-list B. i. p. 26 (1869).

Buse bondrée, French; *Águila de Moros*, Spanish; *Falco pecchiajuolo*, Italian; *Kucciarda*, Maltese; *Khabas el graïn*, Moorish; *Wespenbussard*, *Bienenfalke*, German; *Wespendief*, Dutch; *Hvepsevaage*, Danish; *Hvepsehög*, Norwegian; *Bivråk*, Swedish; *Mehiläishaukka*, Finnish; *Mishelovka-Pchelojadnaya*, Russian.

Figuræ notabiles.

Bechst. Orn. Taschenb. pls. 3, 4, 5; D'Aubenton, Pl. Enl. 420; Werner, Atlas, *Rapaces*, pl. 26; Kjærb. Orn. Dan. taf. v.; Fritsch, Vög. Eur. taf. 5. figs. 6, 7; Naumann, Vög. Deutschl. taf. 35, 36; Sundevall, Svensk. Fogl. pl. 29. figs. 2, 3; Gould, B. of Eur. pl. 16; id. B. of G. Brit. i. pl. 9; Schlegel, Vog. Nederl. pls. 37, 38, 39; Borkh. Teutsch. Orn. part xiv. pls. 1, 2, 3, 4; Susemihl, Vög. Eur. taf. 35.

♂ *ad.* pileo et capitis lateribus cinereis, nuchâ brunneo immixto: corpore suprà saturatè fusco: alis fuscis,

remigibus nigro-fusco terminatis: caudâ grisescenti-brunneâ fasciis quatuor saturatè fuscis transfasciatâ: corpore subtùs albo, pectoris lateribus fusco notatis et hypochondriis vix eodem colore notatis: alis subtùs grisescenti-albidis fusco fasciatis: rostro nigricanti-corneo, cerâ nigricante, ad basin flavidâ: iride et pedibus flavis, unguibus brunnescenti-nigris.

♀ *ad.* pileo et nuchâ saturatè chocolatino-fuscis, plumis ad basin albis et pallidè rufescente brunneo marginatis, loris et regione ophthalmicâ brunnescenti-cinereis, regione paroticâ rufescenti-brunneâ plumis nigro fusco striatis: corpore suprà saturatè chocolatino-fusco, dorso vix purpurascente metallico nitente: alis et caudâ ut in mare picturatis sed saturatioribus: gulâ albicanti-cervinâ fusco striatâ: corpore subtùs saturatè fusco, albo et albicante cervino notato.

♂ *jun.* adulto similis, sed corpore subtùs conspicuè rufescente brunneo notato, pectore fere toto brunneo.

Juv. chocolatino-fuscus, suprà saturatior, capitis colli et gutturis plumis centraliter nigro-fusco striatis, corpore imo subtùs pallidiore: remigibus nigro fuscis, secundariis vix pallidioribus et pallidè brunneo apicatis: caudâ sordidè brunneâ indistinctè fasciatâ, versus apicem saturatiore et albido apicatâ.

Very old Male (Djurgården, Stockholm, 3rd July). Crown and sides of the head pale ashy blue, becoming brownish on the nape, upper parts dark earth-brown, slightly tinged with grey on the back; wings brown, all the quills broadly terminated with dark (almost blackish) brown; under surface of the wing greyish white, barred with dark brown; tail greyish brown, with four broad dark brown bands, the intervening spaces being indistinctly and narrowly barred with lighter brown; underparts white; sides of the breast blotched with brown, and one or two brown markings on the flanks; bill blackish horn, cere blackish, except that at the base it is yellowish, and the edge of the gape is also yellow; iris yellow; legs yellow; claws brownish black. Total length about 20 inches, culmen 1·35, wing 15·8, tail 11·0, tarsus 2·0.

Adult Male (Altenkirchen). Resembles the above, but has the underparts tolerably thickly marked with brown, the breast being most strongly coloured.

Young Male (Sarepta, September). Upper parts chocolate-brown, almost uniform in colour, except that on the head and neck there is a central blackish brown stripe along every feather; quills blackish brown; secondaries rather lighter, and with indistinct light tips; tail dull brown, with indistinct darker bars, darker towards the tip, and finally tipped with white; entire underparts chocolate-brown, darker on the throat and breast and lighter towards the lower abdomen; feathers on the sides of the face, throat, and breast with blackish brown central lines, the rest of the underparts being uniform in colour.

Young Male (Horning, Norfolk, September 1841). Head and neck white, slightly marked on the crown, nape, sides of the head, round the eye, and auriculars with brown; upper parts dark brown, varied with white, the quills being slightly tipped with white; tail as in the adult; underparts white, the feathers on the breast marked with narrow central shaft-stripes.

Adult Female (Altenkirchen, Rhenish Prussia, September). Crown and nape deep brown, the feathers being white at the base and edged with light reddish brown; lores and region round the eye brownish ashy grey; auriculars reddish brown. striped with dark brown; upper parts deep brown, with a chocolate tinge, the back glossed with metallic purple; wings and tail as in the male, but a little darker; throat buffy white, striped with deep brown; rest of the underparts white, so broadly barred with deep brown as to give the appearance of being dark brown marked here and there with white or buffy white.

Culmen 1·4 inch, wing 16·2, tail 11·0, tarsus 2·1. Thus it will be seen that the sexes differ very little in size.

Young Female (near Berlin). Head and neck with the tips of the feathers only dark brown, margined with light reddish brown, the rest being white; back, wings, and tail as in the adult bird, but lighter; underparts white, the feathers being broadly marked with dark brown at the tip; chin pure white, with only a few faint brownish markings.

Obs. Like all the Buzzards the present species also differs considerably in plumage, the differences being, so far as I can gather, not only those of age and sex, but to a large extent individual variations. Naumann (Vög. Deutschl. pp. 568–572) enters very carefully into this question; and it may therefore be well to give a short review of what he says, as probably no one is more competent to give a reliable opinion than this well-known and careful observer. The old male he describes from a specimen which closely resembles the old male above described by me, and therefore I need not recapitulate what he says; his description of the younger male also closely agrees with mine; but the young male in first plumage he describes as follows:—"Head and neck yellowish white; nape, cheeks, and space round the eye slightly marked with brown; underparts white, with light-brown shaft-stripes, and clouded with brown on the crop; lower part of the hind neck spotted with white and brown; upper parts dark brown, with white edges to the feathers; wings and tail darker than in the adult bird; cere ochre-yellow; iris greyish brown." This bird therefore agrees tolerably closely with the specimen from the Norwich Museum, which I have figured. I can scarcely consider this to be the normal dress of the young male; for I have seen most in the dark uniform brown plumage above described, and moreover this white plumage is so rarely met with; indeed I have never seen more than two examples—one in the Norwich Museum, and one in the collection of Mr. C. Sachse, of Altenkirchen, which he would not part with, but of which Herr von Riesenthal kindly made a careful painting for me. The female in the first year's plumage Naumann describes as follows:—"Cere yellow; forehead, cheeks, and throat brownish white; underparts pale rusty brown; upper parts dark brown, and the dark bands and markings on the tail and wings but slightly developed"—thus differing very little from my description of the young male; and I have seen specimens, marked as females, which exactly resembled these males, but were slightly larger in size. The very old female described by Naumann agrees most closely with my description; and he adds that middle-aged females are scarcely distinguishable from males in plumage.

The old male above described must be an exceedingly old bird, as almost all I have seen, shot in the vicinity of the nest, have the underparts marked more or less strongly with reddish brown, the breast being almost uniform brown. The ashy blue on the head in the old bird fades soon after death; yet in the old male in my collection this colour is very distinct and clear, though the bird has been stuffed so long. Usually the old males have the underparts white, rather more marked with colour than in this specimen; but that this is not always the case is clearly to be seen by the fact that a male in the collection of Mr. E. Schütt, the "Bezirks-Förster," at Staufen, in Baden, is very differently coloured. In this specimen the entire upper parts are sooty blackish brown, underparts blackish, the feathers being, however, white at the base; but this colour only shows through very slightly on the abdomen and thighs; chin, upper throat, and fore part of the head to behind the eyes ashy blue; wings and tail as in the adult male above described by me; but the former have a greyish tinge.

The inference I deduce from the examination of the various examples is, that in immature, and also, to some extent, in mature dress the present species is subject to a tendency towards albinism, as, for instance, in the pale whitish plumage worn by the specimen in the Norwich Museum, and towards melanism, as in the specimen in Mr. Schütt's collection above described; but, as a rule, the immature birds vary

more than the old ones. In both sexes the ashy greyish tinge on the head (that is, the clear bluish ashy head in the male, and the ashy brown on the lores and region round the eye in the female) appears to indicate full maturity. The moult appears to take place in July and August, as specimens shot late in August or in September are in very clean and fresh plumage.

The range of the Honey-Buzzard, the only representative of this distinct group we have in Europe, appears to be confined nearly to the Western Palæarctic Region, where, during the summer season, it inhabits the northern and central districts, and, so soon as the cold weather begins to set in, migrates southwards, being found in Africa during the winter. A very gipsy amongst birds, it appears to be found almost everywhere in suitable localities, though nowhere very numerous.

In Great Britain it used formerly to breed in several localities; but of late years its eggs have been so eagerly sought after that it has become exceedingly rare. Professor Newton, in the new edition of Yarrell's 'British Birds,' refers to several recorded instances of its having been found nesting in England previous to 1841, and adds that since then it has been met with breeding in Northumberland, Shropshire, Staffordshire, and Northamptonshire, as well as the New Forest, where it certainly bred within the last few years, and may yet be met with unless exterminated by over-zealous collectors and by gamekeepers, who, knowing the high prices paid for its eggs, use every endeavour to procure them. Mr. J. Gatcombe informs me that it still visits Devonshire occasionally. The last he saw was obtained about two years ago; but it was too much decayed to be preserved, as, not knowing its rarity, the bird-stuffer had let it get too stale. Speaking of its occurrence in Somersetshire, Mr. Cecil Smith writes as follows:— "It can only be considered a rare, irregular straggler to this county. I know of only two having been killed about here, one of the two by Mr. Esdaile's keeper, at Cothelston, about the 8th of July, 1873; it is a young bird, probably of the year before. The other, a still younger bird, is in the collection of the late Mr. Popham, of Bagborough, which is close under the Quantock hills. I did not know for some time that this was really a Somerset specimen, or, indeed, even a British one, till a friend wrote me a short time ago that Mr. Popham had himself caught it in a trap baited with a piece of wasp's nest." In Scotland, according to Mr. Robert Gray, it has been more frequently met with on the east than on the western side. He records many instances of its occurrence, chiefly during the autumn; but two, he says, were shot, curiously enough, in the winter season, in the months of January and February, and it has twice been recorded as having nested in Aberdeenshire. Thompson speaks of it as being a very rare summer visitant to Ireland, and he only refers to four instances of its occurrence there.

In Scandinavia it is generally distributed in the central and southern districts, and ranges far north, especially on the Swedish side. Mr. Collett says that in the south-eastern lowlands of Norway it is at times very numerous, but does not appear to range above the Dovre. In the southern-coast districts, as, for instance, in Smaalehnene and near the Christiania fjord, it is very common in some seasons. In Christiansands Stift it is commonly found up to Nedenæs, but is only sparingly scattered along the west coast, and has been met with at Bergen and on the Nordfjord. In the interior it has been found breeding in Valders, the Gudbrandsdale, and Österdale. In Sweden it is generally distributed throughout the country in suitable localities as far north as the Lapland frontier; for Nilson says that Mr. von Seth took its eggs on the Luleå

river, near the arctic circle. In Finland it likewise ranges far north; for I have received its eggs from the neighbourhood of Uleåborg, and Wolley procured them on the borders of Finland, some distance within the polar circle. It is, however, much more common in the southern than in the northern districts of that country. Mr. Sabanäeff informs me that it breeds in the Government of Jaroslaf, but is rare there. He gives its northern limit as about 58° N. lat., but states that Kessler met with it on the west side of Lake Onega. Mr. Goebel obtained it near Archangel; but Meves only observed it once at Schlusselburg. Respecting its range in Central Russia, Mr. Sabanäeff further states that it breeds in the Government of Moscow, though, curiously enough, it is said not to remain in the Government of Kazan during the summer season. Lemann met with it in the Bashkir country (near Schadrinsk); and it breeds, according to Sabanäeff's own experience, in the Central Ural. Eversmann records it as inhabiting the Kirghis steppes; but Bogdanoff found it very rare along the banks of the Volga. It also breeds in the Governments of Charkoff, Kieff, and Voronege. I have no data respecting its occurrence in the Baltic Provinces and Poland, where it doubtless breeds in suitable localities; but throughout Northern Germany it is met with here and there, though Borggreve states it is, generally speaking, rather rare than otherwise, but is most numerous in Thuringia, and is met with breeding as high as 2000 feet above the sea-level in the mountains. I have eggs from Pomerania and from various parts of Rhenish Prussia, and was told that it breeds in the Black Forest and in various portions of the districts skirting the Rhine. In Denmark, Mr. Benzon informs me, it appears annually in large flocks on the spring and autumn passage, and occasionally a pair or two remain to breed, but its nest is seldom found. He once obtained its eggs from the Thoreby Forest, on Laaland, taken on the 13th June, 1868. In Holland it has on several occasions, Mr. Labouchere informs me, been found breeding near the German frontier; and Mr. Van Wickevoort Crommelin writes to me that it is a rare visitant in the autumn, and occasionally breeds on the dunes in the north of that country. It is said to be rare in Belgium, and more so in Luxemburg, but breeds sparingly in the wooded districts of the Ardennes and the Moselle. In France it is rare in the northern provinces, and, with the exception of a few which breed near the Belgian frontier, it is principally observed in the autumn during passage; but in the south and south-eastern districts, especially in Provence, Anjou, Auvergne, and the Hautes Pyrénées, it is said to be common. Professor Barboza du Bocage does not include it in his list of the birds of Portugal; but it is met with in Spain in the spring on passage northward, and Colonel Irby remarks that the migration extends over some twenty days, being at its climax about the 8th May, and the latest flight he saw was on the 15th of that month. Neither this gentleman nor Mr. Saunders, however, has met with it breeding in that country. In Savoy it is very rare, but occurs during passage, and has been known to remain and breed there; nor is it numerous in Italy, where it also occurs on passage. Doderlein thinks that it breeds in wooded portions of the Apennines above Modena; and it is, he says, numerous in Sicily during the spring passage; but it has not been recorded from Sardinia. Mr. C. A. Wright writes (Ibis, 1864, p. 45) that in Malta it "passes annually in March, April, and May, and again in September and October, and is not uncommon. Flocks of six to a dozen are sometimes seen migrating together." Lord Lilford speaks of it as being exceedingly rare in the Ionian Islands; and it was not recorded from Greece previous to two specimens having been obtained in Attica in

August and September, and sent to the Athens Museum, as stated by Dr. Krüper. In Southern Germany, however, it is met with here and there during the summer. Seidensacher obtained its eggs near Cilli, in Styria; and the Ritter von Tschusi-Schmidhofen informs me that a few pairs breed in the Riesengebirge, but in Moravia it has become rare. In Upper and Lower Austria, Hungary, and Silesia it is, he says, not unfrequently met with, but is rare in Salzburg and Siebenbürgen; and Dr. Anton Fritsch speaks of it as breeding tolerably commonly in Bohemia. According to Mr. C. Farman (Ibis, 1869, p. 203) it was found breeding near Kialdery by Mr. C. McVean, who took the young and shot the old bird; and on the Bosphorus large numbers pass and repass during the two seasons of passage. It appears, however, to be rare in Southern Russia, where, Eversmann says, it is found both in the hills and on the plains, but does not occur in the Government of Kazan. I have a specimen from Sarepta, on the Volga. Dr. Krüper met with it near Smyrna, in Asia Minor; and Canon Tristram speaks of it (Ibis, 1865, p. 255) as being rather scarce in Palestine, but undoubtedly a constant resident. He observed it in November and December near the coast, and saw one which had been shot in the autumn near Beyrout. Mr. Bartlett shot one near Nazareth in April. In North-east Africa it is rare; and though both Hedenborg and Rüppell record it from Egypt, it was not found there by Von Heuglin, and Captain Shelley looks upon it as a mere straggler to that country. On the west side of the Continent it is also found, and cannot be very rare, as large flocks pass and repass annually over the Straits of Gibraltar. Loche, however, only records the occurrence of two examples in Algeria. Favier, however, speaks of it as being numerous during passage near Tangier, at which seasons only is it seen there. Pel obtained it in Fantee; Mr. Ussher procured a specimen from Denkera; and Dr. A. Reichenow writes (J. f. O. 1874, p. 385) that it is, he believes, a resident in the Lower Cameroons, as it has also been killed there in summer. Mr. Layard did not obtain it in the Cape colony; but it is generally believed that the "Tachard" of Levaillant is founded on the present species. Mr. Ayres, however, twice procured it in Natal; and in the British Museum is a specimen from Madagascar.

To the eastward it has been stated to occur as far as Japan; but I am very doubtful as to whether *Pernis ptilorhynchus*, which in immature dress is almost undistinguishable from the present species, has not been mistaken for it. *Pernis apivorus* was not met with in Persia by Mr. Blanford, and certainly does not occur in India. Severtzoff, who states that it is met with rarely in Turkestan on passage, adds that the only specimen he saw was remarkably large in size, differing therein greatly from ordinary European examples.

In its habits the present species is a true Buzzard, being cowardly, even more so than the common Buzzard, and heavy and slow in its movements; consequently it is unable to catch other birds, or any but the weaker or smaller mammals, and its food consists almost entirely of insects, mice, frogs, worms, lizards, &c., but more especially of the larvæ of bees and wasps, from which predilection it derives its name. It certainly cannot, as a rule, be looked on as an injurious bird of prey, except that, as mentioned by Naumann, it is a most adroit and successful plunderer of other birds' nests; and the manner in which they follow and mob a Honey-Buzzard during the breeding-season shows how greatly they fear him on account of their young. Too lazy and clumsy to catch old birds, unless they are ill or crippled, it will sometimes kill and devour a young bird or even a young hare; but, so far as I can gather, these lapses from the proper path

are only exceptional, and it is not a bird that should be persecuted by a game-preserver on account of any mischief it may do amongst the game. As above stated it is especially fond of plundering the nests of wasps and wild bees, and will dig the comb out and devour the larvæ with voracity. That honey is also found in its stomach is certain: whether it eats the honey from choice or only with the larvæ I cannot say; but one which I obtained was so full of honey that before I skinned it I hung it up, head downwards, to let the honey drain off so as to avoid soiling the skin, and on dissection I found a lot of comb, but only a few larvæ, in the stomach. It will frequently walk about amongst the grass in search of insects and worms, which latter it frequently eats; Collett remarks that one was shot on a carcass, and, on dissection, it proved to have been eating maggots so greedily that its stomach was distended as much as possible. During the autumn it is said to eat berries; and Naumann states that he has found, in the spring of the year, the stomachs of Honey-Buzzards filled solely with buds and vegetable remains.

In its flight it somewhat resembles the Buzzard, but is more slightly built, has a longer tail, and may usually be easily distinguished by these differences, and by the markings of the under-parts. It is shy, and not easy to approach within range, except when incubating, when it will sometimes sit so close as not to leave the nest until the climber has mounted into the tree, or even nearly reached the bough on which the nest is placed. It appears fond of sitting for hours together in the same place, on a tree or a large stone, patiently waiting for its prey, too lazy, probably, to hunt for it; but even then it is very difficult to stalk and shoot one. I have not often met with it when collecting, but have found its nest in Germany and Sweden, and have then had an opportunity of watching the birds for some time. As a rule it appears to be a silent bird; and I have only heard it utter a shrill cry resembling the syllables *kee*, *kee*, *kee*, uttered very quickly and continuously whilst the bird was circling overhead. It arrives from the south later than any other of the birds of prey, and commences nidification when the young of the Hawks and Buzzards are hatched—that is, late in May or in June; and sometimes the eggs are not deposited until late in June. It either builds a fresh nest for itself or else makes use of a deserted Buzzard's or Kite's nest, which it repairs and, before the eggs are deposited, lines and garnishes with fresh green leaves, which are regularly replaced as they fade. I have seen a nest so garnished with fresh beech twigs as to make it appear as if the bird intended to make an arbour to shade its nest; and judging from the freshness of these, they must have been changed daily. So soon as the nest is garnished with these green leaves one may look out for the eggs; but I have known the nest to be well furnished with leaves and foliage and have started the female from the nest, and no egg has been deposited for at least a week subsequently. Pässler and Bädeker say that, as a rule, the present species prefers the groves on the plains for the purpose of nidification; but I have not found this to be the case, as all the nests I have seen were in non-evergreen trees in the hills. Mr. Sachse also informs me that it breeds near Altenkirchen in the hills; and Mr. Schütt pointed out to me a place in the mountain behind Staufen, in Baden, where the Honey-Buzzard has bred, and which must be fully a thousand feet above the level of the sea.

Several field-naturalists have called my attention to the fact that the present species will breed in the same locality for several years in succession, and will then suddenly, and without

any apparent cause, disappear, and not return again until several years have elapsed. I cannot find any cause to account for this; but it may possibly be owing to the scarcity of its favourite food that it leaves the locality. Owing to the late season when its eggs are deposited, the trees being then in full leaf, it is very difficult to discover its nest; and hence it may often breed regularly in a locality where its nest is seldom found. Mr. Carl Sachse, of Altenkirchen, in Rhenish Prussia, writing to me respecting its breeding-habits, says, "here the bird is not rare in mountains six to nine hundred feet above the level of the sea; but their late breeding-time makes it difficult to find the nest, as the oaks and beeches are then in full foliage. The nest is placed both in the dense deep forest and in the groves in the fields, generally close to the trunk of the tree, and from twenty to fifty feet from the ground, and is generally not very difficult to get at. Here the nest is always placed in an oak or beech tree of from one to three feet diameter, and generally a deserted nest of a Buzzard or Kite. A fortnight, or even longer, before the eggs are deposited the birds bring fresh leaves (almost always those of the beech) to the nest, and do this *daily* until the eggs are half incubated; indeed I found fresh leaves in a nest on the 11th of May, 1867, in which I only found a couple of fresh eggs on the 2nd of June. The two eggs are deposited after an interval of six or eight days, as I have had an opportunity of observing in three instances. On the 23rd of June, 1869, I took out of a nest one egg, and on the 29th of June the second one, quite fresh; on the 28th of May, 1862, one egg was in the nest, and the second was not deposited until the 6th of June. In the third instance I did not note down all the particulars at the time; but I believe it was in 1857, and I am certain that the two eggs were deposited after an interval of six days. The bird sits very close, and I have several times observed it, when the climber had almost reached the bough on which the nest was placed, slip quietly off the nest and run along the bough, and then fly off. On the 6th of June, 1870, I struck the tree, in which a nest was placed about twenty feet from the ground, repeatedly; but the bird remained on it, and only when we had hammered away violently at the tree for some time did it rise and stand on the edge of the nest, shake itself, look astonished, and then sit down quietly again on the eggs as if nothing had happened. When the climber had almost reached the nest, the bird left, but soon returned, and perched on the next tree so close that I could easily have shot it. After the eggs (which were fresh) were taken and packed up, the bird flew off and circled for some time round the nest—at a great height, however. Both male and female incubate; and the sitting bird, when on the nest, is regularly fed by the other with wasps' nests in which the grubs are.

"On the 14th of June, 1868, I shot a male as it left the nest; and the incubation-spot showed that the bird had sat no little time on the eggs, which were eight days incubated. This bird left the nest only when the climber had reached and grasped the bough on which the nest was, and which was about fifty feet from the ground. On the same day I took another nest about eight miles distant from the one above referred to, which was placed in the main fork of an oak tree about forty feet from the ground. Out of this nest I took two eggs of the common Buzzard on the 26th April; and when fourteen days subsequently I climbed to the nest I found it tenanted by a Honey-Buzzard, lined with fresh beech leaves, and in it lay a half-eaten Blackbird.

"Only one fresh egg was in the nest, and the other one was on the ground close to the foot of the tree; indeed I almost trod on it, and only noticed it as I bent down before throwing the

rope over a bough. I may here remark that I have often found eggs on the ground in the forest, viz. of *Buteo vulgaris*, *Falco subbuteo* (in thickets), *Strix flammea*, *Cypselus apus*, and often *Sturnus vulgaris*.

"When I had almost reached the nest the bird flew off, but when about fifty paces distant rose into the air and was soon joined by its mate, and both birds watched me take the egg. In this nest were also several wasps' nests and fresh beech leaves. In every instance when I took the eggs I could easily have shot the bird; but I let them go, so as to be able to secure the eggs the following year. On the 9th of August, 1863, I took two young birds nearly fledged, which I presented to the Zoological Gardens at Cologne. When there, the Director, Mr. Bodinus, assured me that their favourite food was white bread and rolls. Unfortunately they died, from not being taken in early enough in the winter.

"During ten years I have taken here the eggs out of about thirty nests, and always found two, only in one instance three, which latter I sent to Seidensacher. I generally took them about the 6th of June; but they are frequently not deposited before the middle of June, and once only was one laid in May. The interior of the egg is sometimes greenish, sometimes whitish yellow. Seidensacher states that he has only found the latter to be the case; but I have six which are green. The Honey-Buzzard arrives here in April, and leaves us in September, sometimes in October." And in another letter he subsequently writes to me as follows:—"In a nest which had been tenanted by *Milvus regalis* the previous year I found on the 21st of May, 1871, green leaves, and saw the pair of Honey-Buzzards sailing above it. On the 28th of May the nest was well garnished with green leaves, and as I commenced to climb the tree the female came and sat on her nest, not leaving it until I was within a metre of it. It contained no egg then; and on the 10th of June, when I again examined it, I found the foliage withered, and only one small piece of green in the nest, together with an earth-worm, but still no egg. On the 28th of June I took two eggs out of the nest, one of which was about one day, and the other four or five days incubated. One of these eggs was much longer and narrower than the other. The nest was built in the main fork of a beech tree, about a foot in diameter, and was about twenty-eight feet from the ground.

"The Honey-Buzzards used often to carry green leaves and wasps' nests to another nest; but no eggs were ever deposited there. The Honey-Buzzard, Kestrel, and Hobby often use a nest as a sort of storehouse, and one finds in them half-eaten birds, mice, earthworms, &c. &c."

As a rule, I believe that the present species deposits two or three eggs; I have more frequently received the former than the latter number; but Mr. Benzon informs me that it sometimes lays as many as four. Judging from those I have seen, the eggs of this species vary much, but are, as a rule, very richly coloured. I possess twenty, from Germany, Norway, Sweden, and Finland, all of which, with one exception, are very closely blotched with deep reddish brown on a yellowish brown or rich fox-red ground; several are so dark as to look almost uniform mahogany brown; and two are marbled with reddish brown on a rich fox-red ground. One egg only, from Norway, is white, closely blotched with deep umber-brown at one end, and otherwise sparingly marked with large blotches of deep brown. In size these eggs vary from 2 inches by $1\frac{24}{40}$ to $2\frac{6}{40}$ by $1\frac{27}{40}$ inch. Mr. Benzon gives the sizes of eggs in his collection as being from 49 by 39 to 51 by 44 millimetres, the single specimen from Denmark

being the smallest. He says that he possesses eggs which somewhat resemble those of the Peregrine, but can be distinguished by the greenish colour of the inside of the egg. This, however, I may add, is not a sure guide; for I possess two undoubted eggs of the present species which have the inside of the shell yellow.

The specimens figured are as follows:—on the first Plate a very old male from Sweden, and a very old female which had been known to breed near Altenkirchen for several years, and which was shot when I was there; on the second Plate is a young male from Sarepta in the dark chocolate dress, and a young female from near Berlin; and on the third Plate are the white variety from the Norwich Museum, and an ordinary adult male, with the underparts marked with brown, from Altenkirchen. Full particulars as to when and where these specimens were obtained are given below.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Djurgården, Stockholm, July 3rd, 1850 (*A. Fahnsson*). *b*, ♀ *juv.* Near Berlin (*A. Grünack*) *c*, *juv.* Belgium (*A. Dubois*). *d*, ♀ *ad.* Altenkirchen, Rhenish Prussia, September 1873 (*H. E. D.*). *e*, ♂ *ad.* Altenkirchen, 1873 (*Von Reisenthal*). *f*, *juv.* Saxony (*H. F. Möschler*). *g*, ♂ *juv.* Sarepta, Russia, September 1871 (*Möschler*). *h*, ♂ *juv.* Smyrna, November 3rd, 1871 (*Dr. Krüper*).

E Mus. C. Sachse.

a, ♂ *ad.*, *b*, ♂ *juv.*. Altenkirchen (*C. Sachse*).

E Mus. E. Schütt.

a, ♂ *ad.* Pfullendorf, Baden, June 7th, 1872. *b*, ♂ *ad.*, var. Pfullendorf, June 20th, 1872.

E Mus. Norv.

a, ♂? *juv.* Horning, Norfolk, September 1841 (*W. F. Fisher*).

E. Mus. Howard Saunders.

a, ♂ *ad.* Malaga, September 20th, 1872.

Accipiter apud Brisson, Orn. i. p. 321 (1760).
Falco, Linnæus, Syst. Nat. i. p. 124 (1766).
Hierofalco apud Cuvier, Règne Anim. i. p. 312 (1817).
Hypotriorchis apud Boie, Isis, 1826, p. 976.
Cerchneis, apud Boie, ut suprà.
Erythropus apud C. L. Brehm, Isis, 1828, p. 1270.
Ægypius apud Kaup, Natürl. Syst. p. 29 (1829).
Pannychistes apud Kaup, op. cit. p. 57 (1829).
Aesalon apud Kaup, op. cit. p. 40 (1829).
Dendrofalco apud G. R. Gray, List. of Gen. of B. p. 3 (1840).
Tichornis apud Kaup, Classif. Säugeth. u. Vög. p. 108 (1844).
Pœcilornis apud Kaup, Contrib. to Orn. 1850, p. 53.
Gennaia apud Bonaparte, Rev. et Mag. de Zool. 1854, p. 536.
Pnigohierax apud Cabanis, Journ. f. Orn. 1872, p. 156.
Lithofalco apud Blasius, fide R. B. Sharpe, Cat. Accipitr. p. 374 (1874).

The Falcons are essentially the most noble of all the Raptores. Compact and powerful in structure, and endowed with great power of wing, as well as high courage, they are specially formed for a predatory life; and all obtain their prey by capturing it while flying, or pouncing on it from above when quartering the ground on the wing. By many authors the genus *Falco* has been considerably subdivided, our European Falcons having been separated into three genera, *Falco*, *Hierofalco*, and *Cerchneis*; but it appears to me unadvisable to separate these groups generically.

The Falcons are distributed throughout all the zoogeographical regions into which the world has been divided, except that they are not represented in Oceania. In the Western Palæarctic Region fourteen species are found, the distribution of which is given in the following separate articles. These birds inhabit both the plains and woods as well as cultivated places—in fact any localities where they can best find food. They are extremely strong in flight, rapacious and bold, and feed on the smaller mammals and birds, which they pursue on the wing and strike down; and it is the birds belonging to this genus which are, as a rule, utilized in falconry. Some of the species (*Falco eleonoræ* and *Falco vespertinus* for instance) feed chiefly (these two, indeed, almost exclusively) on insects, whereas several of the other species prey only on the smaller mammals and birds. They breed on trees and on rocks, some species even nesting on the ground, and either construct their own nest of sticks and twigs lined with wool and moss, or else take possession of and repair any suitable nest which may have been deserted by its owner. Some species, however, *Falco cenchris* for instance, nest in holes, constructing either a slight nest or else depositing their eggs without any thing being placed under them. The eggs of the Falcons vary a good deal, some being much more richly marked than others. They are, as a rule, blotched and marked with deep orange, rufous, or deep reddish brown, on a dull white, reddish white, or dull buffy orange ground.

Falco peregrinus, the type of the genus, has the bill short, strong, curved from the base, upper mandible with a median festoon and an anterior angular process, the tip strongly hooked and sharp; lower mandible with the tip truncate, and a rounded notch on each side near the tip; wings long and pointed, the second quill longest, the first and third being nearly equal; tail long, broad, rounded; legs strong, tarsus rather short, covered with scales, of which the anterior ones are somewhat hexagonal; toes long, scutellate above; claws long, curved, acute, flat beneath.



J.G.Keulemans del

Mintern Bros imp

JERFALCON.
FALCO GYRFALCO.

FALCO GYRFALCO.

(JER FALCON.)

Accipiter gyrfalco, Briss. Orn. i. p. 370, pl. xxx. fig. 2 (1760).
?*Falco lanarius*, Linn. Syst. Nat. i. p. 129 (1766).
Falco gyrfalco, Linn. Syst. Nat. i. p. 130 (1766).
Gerfault de Norwège, D'Aubenton, Pl. Enl. pl. 462 (1770).
Le Gerfaut, Buff. Hist. Nat. Ois. i. p. 239, pl. xiii. (1770).
?*Falco sacer*, J. Forster, Phil. Trans. lxii. p. 382 (1772).
?*American Sacre, Speckled Partridge-Hawk*, Pennant, Arct. Zool. ii. p. 202. no. 96 (1785).
Falco sacer, var. β, Gmel. Syst. Nat. i. p. 273 (1788).
?*Falco cinereus*, Gmel. Syst. Nat. i. p. 267 (1788).
Le Tiercelet pagard du Gerfaut, Schl. & Verst. Traité Fauc. pl. 7 (1853).
Hierofalco gyrfalco (L.), C. L. Brehm, J. f. O. 1853, p. 266.
Falco gyrofalco, Thien. Abbild. Vogeleiern, Taf. li. figs. 3 *a–d* (1854).
Norway Falcon, Salvin & Brod. Falconry, pl. xv. (1855).
Falco norvegicus, Tristr. Ibis, 1859, p. 24.
Falco gyrfalco norwegicus, Schl. Mus. P.-B. *Falcones*, p. 12 (1862).
Falco (*Hierofalco*) *gyrfalco* (L.), var. *sacer*, Forst., Ridgw. N.-Am. Birds, iii. p. 115 (1874).

Jer Falcon, *Norway Falcon*, English; *Gierfalk*, German; *Riefsakfalle*, Lapp; *Jagtfalk*, Norwegian and Swedish; *Krechet*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 462; Bechst. Orn. Taschenb. taf. 9; Naumann, Vög. Deutschl. taf. 391. fig. 1; Sundevall, Svensk. Fogl. pl. 26. fig. 1; Gould. B. of G. Brit. i. pl. 16; Schlegel, Vog. Nederl. pls. 4, 5; Salvin & Brod. Falconry, 2nd edit. pls. xiv., xv.; Schleg. & Verster, *l. c.*

♂ *ad.* suprà saturatè schistaceo-cinereo, pallidè cinereo et cinerascente cano fasciato: pileo saturatiore fere immaculato nigricanti-schistaceo, plumis nonnullis rhachibus nigris: striâ indistinctâ supra oculum ad nucham ductâ: nuchâ albido notatâ: uropygio et supracaudalibus cærulescenti-cinereis, schistaceo fasciatis: remigibus fuscis, extùs cinereo notatis et in pogonio interno cinereo-albis fusco fasciatis: caudâ fuscâ vix schistaceo lavatâ et sordidè canescente cinereo fasciatâ et albido apicatâ: capitis lateribus albidis nigro-fusco notatis, regione suboculari et regione paroticâ summâ cum lineâ a basi mandibulæ fuscis schistaceo lavatis: corpore subtùs albo, pectore et corpore imo maculis longitudinalibus ovalibus notatis: hypochondriis, subcaudalibus et subalaribus fusco-schistaceo fasciatis: rostro plumbescenti-corneo, versus apicem nigro: cerâ, marginibus palpebrarum et pedibus flavis, unguibus nigris: iride saturatè fuscâ.

♀ *ad.* mari similis sed major.

Juv. pileo, capitis lateribus et nuchâ albis nigro-fusco striatis: corpore suprà saturatè fusco, plumis sordidè albido et fulvido marginatis: uropygio pallidiore et vix cinereo tincto: remigibus ut in adulto sed brunnescentioribus et apicibus albicante cervino marginatis: caudâ fuscâ albo apicatâ et albicante cervino fasciatâ, his fasciis brunneo punctatis: corpore subtùs albo, gutture angustè fusco striato, et corpore imo subtùs striis latioribus saturatè fuscis notato: cerâ et pedibus plumbeis: iride nigro-fuscâ.

Adult Female (East Finmark). Upper parts very dark slaty grey, barred with light blue-grey, or almost white in some parts; crown darker, unmarked with lighter colour, but the feathers have blackish shaft-stripes; an indistinct buffy white stripe passes from behind the eye to the nape, the latter being marked with buffy white; hind neck rather more marked with white than the rest of the upper parts; rump and upper tail-coverts clear blue-grey, barred with slaty blue; quills dark brown, on the outer web mottled with grey, the inner web above the emargination being dark brown on the inner part near the shaft, the rest being greyish white barred with dark brown; tail brown with a slaty tinge, closely barred with blue-grey or mouse-grey, these light bars being freckled with darker grey; extreme tip of tail white; sides of the face white, marked with black, the space below the eye, the upper line of the ear-coverts, and a broad moustachial stripe from the base of the lower mandible dark slaty brown; underparts white, the upper throat and chin nearly unmarked, the rest of the underparts sparingly marked with drop-shaped long stripes; flanks, under tail-coverts, and under wing-coverts barred with dark slaty brown; bill blue, becoming black towards the tip; cere, edge of the eyelid, and feet yellow; iris nearly black; claws black. Total length about 24 inches, culmen 1·5, wing 15·0, tail 10·0, tarsus 3·0.

Adult Male. Similar to the female, but much less. I do not possess an example so adult as the female above described; and the oldest specimen I have, though it has attained the full dress on the back, rump, tail, and underparts, has the head nearly as light as in the young bird, and the wings are more tinged with brown than in the fully adult bird. This specimen measures—total length about 21 inches, culmen 1·35, wing 13·6, tail 8·5, tarsus 2·4.

Young Male (Wadsö, East Finmark). Crown, sides of the head, and nape buffy white, striped with dark brown, the forehead being white, with very narrow dark pencillings; upper parts dark brown, the feathers margined with buffy white, and here and there slightly marked with buff or fulvous buff; rump rather lighter brown, similarly marked, and with a faint blue-grey tinge; quills as in the adult, but browner and with the terminal portion margined with buffy white; tail dark brown, tipped with white, and barred with buffy white, these bars being slightly freckled with brown; underparts white, on the throat narrowly, and on the rest of the underparts tolerably closely and broadly striped with dark brown; the dark patch on the side of the head and the moustachial stripe are indicated by being more darkly marked, the intervening parts of the side of the head being whiter; bill horn-blue, darker towards the tip; cere bluish; feet lead-blue, claws black.

The range of this, the so-called "Norwegian" or true Jer Falcon, in contradistinction to the Iceland and Greenland species, is somewhat extensive, as it inhabits Northern Scandinavia and North Russia, and thence is found right across Northern Asia into Arctic America. In Europe, however, its range is comparatively restricted; for it is only met with as a resident in the northern portion of Scandinavia and Russia, stragglers being occasionally seen in more southern latitudes during the winter. It has never been observed in England; and I find no record of its occurrence in France, beyond the statement made by Messrs. Degland and Gerbe to the effect that young examples only occur accidentally in that country. It is stated to occur

in Holland; but Messrs. Salvin and Brodrick say that, so far as they can ascertain, only two specimens have been taken, at the huts at Valkensvaard. Professor Blasius writes (Naum. Vög. Deutschl. xiii. pt. ii. p. 23) that North Germany, as a rule, is only visited by young examples of this species in the winter season; and the same gentleman states (Ibis, 1862, p. 65) that it has been found on Heligoland. In Northern Scandinavia, as above stated, it is resident; and Mr. Robert Collett states that "it breeds commonly on the Norwegian fells above the Polar circle, and is most commonly found round the Varanger fiord and along the more elevated fells of Nordland and Trondhjems stifts, and on the Dovre and Langtfjelds and their branch ranges down to the Thelemarksfjelds in Christiansand stift. It visits the lowlands sparingly in the autumn and winter, and has been on several occasions shot in the southern coastal districts, as at Christiania, in Smaalehnene on the Skiensfjord, at Christiansand, and is said to be tolerably common on the Jæderen and at Stavanger and Bergen. Formerly the most of the Jer Falcons were taken in Finmark, in Romsdals Lehn, on the Dovre, on the Österdalsfjelds, and on the Thelemarksfjelds." On the Swedish side it is found in Lapland, and, according to Professor Sundevall, occurs sometimes in Norrland and but rarely in Southern Sweden, whereas in Finland it is only found in the high north. Professor Malmgren believes that a Falcon which was seen on the eastern side of the entrance to Wyde Bay, in Spitzbergen, cannot have been any thing but the present species; and Von Heuglin writes (Ibis, 1872, p. 61) as follows:—"We observed, both in Matthew's Strait and also in Kostin Shar, two large Falcons, which are certainly to be referred to the above-named species;" and Mr. Gillett says (Ibis, 1870, p. 304), "I saw two large Falcons, which I imagine were of the Norwegian form, flying over the ship by Vaigat's Island, at the entrance of the Kara Sea; both were in immature plumage; but I could not obtain a specimen." So far as I can gather, the present species extends right across Asia into North America, from which latter country I have seen undoubted examples. It certainly is found in Northern Russia, in the vicinity of Archangel; and the various travellers who have visited Novaya Zemlya speak of a large Falcon, which probably should be referred to this species. Mr. Sabanäeff informs me that it breeds in the Moscow Government, but has only been observed in that of Jaroslaf during passage. It also breeds in the district of Dorogobugesk, in the Smolensk Government. In the Ural it is, he says, rarer than the Peregrine and the Saker, but is found on the western side and in the northern parts of the Perm Ural. How far to the south in Russia it occurs I cannot with certainty say; but it doubtless does not straggle far to the south. In Siberia it was certainly met with by Von Middendorff, who says that all he saw wore a dark plumage, thus showing that the species observed by him was the true Jer Falcon. He writes (Sib. Reise, p. 127) as follows:—"In the Taimyr country I first observed this Falcon, near the Nówaja river, on the 20th May, when it was probably passing northwards towards its breeding-haunts; for when we approached the Arctic Ocean in August I again saw it frequently, and met with it as far as Baer Island, in $75\frac{1}{2}^{\circ}$ N. lat." Dr. Radde obtained a young male from the Apfelgebirge, which, from his description, appears to have been the young of the present species, though he compares it to a dark young bird of the true Greenland Falcon, and to the bird referred to by Pallas under the name of *Falco lanarius*. He writes (Reis. im Süd. v. Ost-Sib. p. 99) that it is found, though rarely, throughout the country he visited, excepting the Mongolian elevated steppes, but is rare, and only young birds were observed during the winter

season. Late in September it was observed in tolerable numbers in the Bureja Mountains, and lived chiefly on squirrels, but was so shy that he could not obtain a specimen. There is, however, no doubt that the specimen referred to by Von Schrenck as having been obtained by Maack at Nertschinsk, in March 1855, is referable to *Falco candicans*, as he gives a careful and detailed description of it. Pallas also states that whereas the Jer Falcon which is found in the Ural and Altai is dark in colour, and not unlike a young Peregrine, the bird found in Eastern Siberia and Kamtschatka is white, like the species found in Iceland.

The present species also inhabits North America, where, according to Mr. Ridgway (*l. c.*), it is found in the "interior regions of Arctic America, Anderson-River, McKenzie, Yukon, and Severn-River regions, breeding abundantly in the former district." I am indebted to Professor Spencer F. Baird for an opportunity of comparing American examples with those in my collection from Scandinavia; and it may not be out of place to reproduce some notes respecting these examples which I read at a Meeting of the Zoological Society in March last. Four specimens were forwarded to me for examination by Professor Baird, particulars as to locality &c. being given below:—

Specimen *a*, an adult female, compared with a female of *F. gyrfalco* from Quickjock, Lapland, agrees so closely that I cannot trace the least difference either in coloration, measurements, or any thing else; and as the two skins are made up much alike, I could not well tell them apart, except by the labels. Mr. Blanford, who is working with me, is also unable to discern any difference.

Specimen *b*, a male, evidently adult, agrees closely with an old male from Lapland in my collection, but has the head darker and less streaked with white, and the back is also bluer than that of the Lapland specimen. Doubtless the American bird is the older of the two.

Specimen *c*, also a male, agrees tolerably well with my male bird from Lapland, but has the head darker.

Specimen *d*, a female, agrees very closely with a female from Lapland.

Mr. Ridgway evidently lacked the materials which have been at my disposal, or he would doubtless have arrived at precisely the same conclusion as I have done. Indeed, he writes (*l. c.*) as follows respecting the female bird from Fort Anderson:—"Upon comparing this specimen with the figures of a pair of var. *gyrfalco* by Wolf in Newton's 'Ootheca Wolleyana,' I can discover no difference at all," thus showing that he only needed the necessary materials to convince himself of the identity of the American and European Jer Falcons. As the American authors call this bird *Falco sacer*, Forst., I made careful research as to whether the species described by Forster in 1772 really is the Jer Falcon; and the result of my search may be summed up as follows. Forster writes (Phil. Trans. lxii. p. 382, abridged edition, p. 331):—"Speckled Partridge-Hawk at Hudson's Bay. The name is derived from its feeding on the birds of the Grous tribe, commonly called Partridges, at Hudson's Bay. Its irides are yellow and the legs blue. It comes nearest the Sacre of Brisson, Buffon, and Belon; but Buffon says it has black eyes, which is very indistinct, for the irides are black in none of the Falcons, and in few other birds; and the pupil, if he means that, is black in all birds. It is said by Belon to come from Tartary and Russia, and is therefore probably a northern bird. It is very voracious and bold, catching Partridges out of a covey which the Europeans are driving into

their nests (? nets). It breeds in April and May. Its young are ready to fly in the middle of June. Its nests, as those of all other Falcons, are built in unfrequented places; therefore the author of the account from Severn River could not ascertain how many eggs it lays; however, the Indians told him it commonly laid two. It never migrates, and weighs $2\frac{1}{2}$ pounds; its length is 22 inches, its breadth 3 feet."

From this it will be seen that it is most difficult to determine with any degree of certainty what the species is to which Forster refers. The yellow iris would point to an immature Goshawk; but that bird has not blue legs, and, doubtless, Forster would not have mistaken the Goshawk for the Saker. On the whole the probability is that the bird in question really was a Jer Falcon; but there is no certainty at all on the subject, and I think that on the whole the best plan to follow is to disregard Forster's reference altogether, especially as the true Saker Falcon, which is the Sacre of Brisson, was named *Falco sacer* by Gmelin in 1788, sixteen years subsequently to when Forster mistook the bird obtained by him, whatever it was, for Brisson's Sacre, a species which does not occur in North America.

Of the habits of this Falcon but little is on record. It frequents, as above stated, rocky and wooded districts, and feeds on squirrels, small mammals, and birds, especially Ptarmigan &c. It is a swift, powerful bird, very strong on the wing, and is the most esteemed amongst the Falcons employed in falconry. Buffon, who remarks that the Norwegian bird differs from the Iceland species, says that it is held in greater esteem by the falconers than *F. islandus*, being more couragous, active, and docile. Mr. Wolley, the well-known oologist, appears to be the first naturalist who has given full details of the nidification of the present species from personal observation; and Professor Newton has published the fullest particulars relative to the taking of many nests by Mr. Wolley and his collectors in the 'Ootheca Wolleyana,' to which I may refer such of my readers as wish for further details than those I glean from Mr. Wolley's notes. This gentleman describes (Ooth. Woll. p. 88) the taking of a nest of the Jer Falcon by himself as follows:—"We had not long left the track on the river when a Falcon flew up from the rock where the nest was supposed to be, and soon afterwards, turning back, settled on the trunk of a dead tree, once or twice uttering a cry. I now knew there was a nest, and in a few minutes more I saw it, looking very large, and with a black space about it, as though it were in the mouth of a little cave in the face of the rock. This was a joyful moment; but not so much so as when the hen bird flew off with somewhat cramped wings, and settled on a little stump some thirty yards from the nest. I would not let Ludwig shoot. We were ascending the hill, and might be fifty yards off when she left the nest. I took off my shoes, though there was deep snow everywhere, except just on the face of the rock, and first tried it from above; but it seemed scarcely practicable. Then I went below; and with the Lapp to support my feet, and Ludwig to give me additional help with a pole, I managed to climb up. Just at the last bit I had to rest some time. Then I drew myself up, and saw four eggs to my right hand, looking small in the middle of a large nest. Again I waited to get steady for the final reach. I had only a bit of stone to stand upon not bigger than a walnut, and frozen to the surface of the ledge, which sloped outwards. I put two of the eggs into my cap, and two into my pocket, and cautiously withdrew. The nest appeared to have been quite freshly made, and therefore by the bird herself. The sticks were thick, certainly more so than those used by Ravens or Buzzards, and, unlike the

nests of the latter, which I saw the next day, they were barkless and bleached. The only lining was a bundle or two of coarsish dry grass. As I returned I touched the eggs on a point of rock above me, luckily without injuring them. I handed them down in a glove at the end of a pole (which the Lapp improvised) after the fashion of a church collecting-bag; and when they were placed in a safe corner, my feet were put in the right places, and I descended in safety. I had luckily brought a box with hay, and on the 12th May had the eggs safe at Muoniovaara. There were young inside, perhaps an inch and a half long, with heads as big as horse-beans." Besides the above, details are given of many other nests taken by Mr. Wolley and his collectors. One nest, taken in a cliff near Pinkisjärvi on the 27th April, 1855, he describes as follows:—"The nest, very large and with a considerable hollow, was made of fresh sticks, not very big; and inside were a few green willow twigs and several tufts of sedgy grass;" and one taken by Ludwig, his man, in West Finmark, 28th April, 1857, is described as "built mostly of old bare birch twigs; and then upon these were some finer birch twigs with the bark on, but old and dried up. These were mixed with others, rotten and crumbling, some Grouse-feathers, and bilberry-leaves. The nest was about three ells from the bottom; and the hollow was four inches deep, and half an ell across." In almost all cases the nest was placed on a rock or in the cleft of a cliff; but Mr. Wolley records two instances of this Falcon breeding in a tree, about seven fathoms from the ground, the cause for the choice of so exceptional a situation for the nest being probably the want of a suitable nesting-place in rocks near where it had taken up its abode. The number of eggs deposited appears to be generally four, though in many cases three only were found in the nest.

I possess a series of eggs collected in Lapland, which tolerably closely resemble those of the Iceland Falcon both in size and coloration, but are rather finer in grain; and, judging from those in my collection, they do not vary so much as the eggs of this latter species. They are closely spotted or freckled with foxy red or reddish orange on a dull white ground, the latter being scarcely discernible between the markings.

The specimens figured are an adult female on the left in the foreground, and a young male to the right in the background, both from East Finmark, and in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂, *nearly adult*. East Finmark, June 1870 (*Nordvi*). *b*, ♂ *juv*. East Finmark, August 26th, 1869. *c*, ♀ *ad*. East Finmark, 1870 (*Nordvi*). *d*, ♀ *ad*. With large incubation-patch, Quickjock, Lapland, 1866 (*T. E. Buckley*).

E Mus. Smithson.

a, ♀. Fort Anderson, Arctic America, May 29th, 1864 (*MacFarlane*). *b*, ♂. Fort Yukon, Porcupine River (*Captain F. J. Page*). *c*, ♂. Fort Yukon, Arctic America, June 1862 (*J. Lockhart*). *d*, ♀. America.





J.G.Keulemans del.

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GREENLAND FALCON.

FALCO CANDICANS

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(GREENLAND FALCON.)

Falco gyrfalco, Briss. Orn. i. p. 370, pl. xxx. fig. 2 (1760).
Le Gerfaut blanc, Buff. Hist. Nat. Ois. i. p. 241 (1770).
Falco islandus, var. *albus*, Gmel. Syst. Nat. i. p. 271 (1788, ex Brünn.).
Falco candicans, Gmel. Syst. Nat. i. p. 275 (1788).
Falco islandicus, Lath. Ind. Orn. i. p. 32 (1790).
Falco gyrfalco, Pall. Zoog. Rosso-As. i. p. 324 (1811, nec Linn.).
Hierofalco candicans (Gm.), Cuv. Règne Anim. i. p. 312 (1817).
Falco grœnlandicus, Hancock, Ann. Nat. Hist. ii. p. 247 (1839).
Hierofalco gyrfalco, Kaup, Contr. Orn. 1850, p. 56 (nec Linn.).
Falco islandicus candicans, Holböll, Zeitschr. ges. Naturw. iii. p. 426 (1854).

Kirksoviarsuk kakortuinak, Greenlandic.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 446; Werner, Atlas, *Rapaces*, pl. 6; Naumann, Vög. Deutschl. taf. 21. figs. 1, 2, taf. 390. fig. 1; Gould, B. of Eur. pl. 19; Audub. B. of Am. pl. 366; Elliot, B. N. Am. pl. 12; Susemihl, Vög. Eur. taf. 6*a*; Salv. & Brod. Falconry, 2nd ed. pls. 10, 12, 13.

Ad. albus, plumis in corpore suprà, uropygio et alis suprà versus apicem nigro notatis: remigibus albis versus apicem conspicuè nigro notatis: caudâ albâ immaculatâ: corpore subtùs albo, hypochondriis vix nigro notatis: rostro flavido, versus apicem pallidè corneo: pedibus flavis: iride fuscâ.

Juv. capite, collo et corpore subtùs albis, nigro-fusco striatis: corpore suprà albo, plumis centraliter guttis elongatis nigro-fuscis notatis, remigibus magis nigro-fusco quam in adulto notatis: caudâ albâ vix nigro-fusco notatâ.

Adult Female (Labrador). Upper parts pure white, the feathers on the back, rump, and upper surface of the wings marked with a wide V-shaped black spot towards the tip; quills white, broadly marked with black towards the tip; tail pure white; underparts pure white, slightly striated on the lower flanks; bill yellowish, towards the tip horn-coloured; legs yellowish; claws light horn; iris dark brown. Total length about 23 inches, culmen 1·5, wing 16·5, tail 9·8, tarsus 3·0.

Young (Greenland). Head, neck, and underparts white; the head, breast, and flanks with narrow blackish brown striations; upper parts white with long, almost drop-shaped, brownish black central markings; quills with more black on them than in the adult; tail white with a very few dark markings.

Obs. The two specimens above described appear to me to belong both to the palest form of this species. Other adult birds have the upper parts more conspicuously marked with black, the markings being

broader, and forming bands, the tail also being barred with blackish. In this darker form the young birds have the upper parts much more profusely marked than in the young bird above described, the dorsal feathers showing only a white margin; the tail and wings are broadly barred, and underparts are marked with brownish-black stripes. In all the young birds the dark markings are duller than in the adult, being dull sooty brownish, whereas in the old bird they are clearer black. The bill in the young bird is tinged with horn-blue, and the legs are greyish blue in tinge. As in all the Falcons, the male is less in size than the female, the average size of the males in my collection being—culmen 1·3, wing 14·0, tail 8·2, tarsus 2·75.

During the last four or five years I have made use of every available opportunity of examining specimens of the northern Falcons in as many stages of plumage as possible; and I have also succeeded in obtaining for my own collection a tolerably fair series of examples from different localities. The result of my investigations is that I now fully coincide with the opinion formed by Mr. Hancock (Ann. & Mag. of Nat. Hist. 2nd ser. xiii. p. 110), and indorsed by several of our most eminent authorities, and lately, also, by Professor Newton (Yarr. Brit. B. ed. 4, i. p. 38), viz. that the Greenland Falcon is invariably light-coloured from its youth, and the Iceland Falcon dark-coloured above in both adult and young plumage. In all the true Falcons, so far as I am aware, the immature dress is characterized by longitudinal stripes and markings, whereas in the mature dress most of those markings are disposed transversely; and the northern Falcons make no exception; but I believe that there is a good deal of individual difference in the amount of colour in examples of the Greenland Falcon, many specimens being much whiter than others from the earliest stage when feathered. I must not omit to refer to the researches made by Mr. R. B. Sharpe on the present question, though at the same time I frankly confess that, after carefully following him throughout his arguments, I cannot at all agree with him. In the first place he entirely sets aside the important evidence obtained by a careful examination of living birds, and restricts his researches to an examination of dried skins, which in a question of this nature are not unfrequently apt to mislead one. I have now before me a most carefully executed painting by Wolf of a young Greenland Falcon, taken from a live specimen in the possession of Mr. J. H. Gurney, and another painting by the same eminent artist of the same bird after the lapse of four years; and these two drawings clearly illustrate the changes in the character of the markings from longitudinal to transverse. I may add that the opinion I hold in common with Mr. Hancock, Professor Newton, Mr. Gurney, Mr. Gould, Professor Schlegel, and other eminent authorities coincides strictly with that held by falconers who have studied these birds chiefly, if not altogether, when alive; and it is therefore, I may safely affirm, most likely to be the correct one. Judging from specimens kept in confinement or used for the purpose of falconry, the young plumage is cast and that of maturity assumed at the first moult, which takes place when the bird is from nine to fifteen months old; and when once the adult dress is obtained, no further alteration in colour takes place at subsequent moults.

The Greenland Falcon inhabits Greenland (where it is found chiefly in the northern districts), Iceland, Arctic North America, and Northern Asia; and as a straggler it is found, as below stated, at considerable distances from its true home. As regards its occurrence in Great Britain, I cannot do better than quote from Professor Newton, who writes (*op. cit.* p. 42) as follows:—"The young bird from which the figure here given was taken, was shot in Pembrokeshire, in a warren belonging to Lord Cawdor, and by him presented to the Zoological Society, whence it passed to the British Museum, where it now is. It had been observed, says Mr. Tracey (Zool. p. 2639), by his father for eight or ten days before it was killed. A specimen taken at Port Eliot, in Cornwall, and now in the collection of Mr. Rodd, as stated in the second edition of his 'List of British Birds' (but said by Mr. Brooking Rowe to be the example whose occurrence on

the Lynher in February 1834 was mentioned by Dr. Edward Moore), is believed by Mr. Rodd to be of this form, as is probably one obtained at the Lizard, and also recorded by him. Hunt, in his 'British Ornithology,' has figured an example taken alive on Bungay Common, in Suffolk, some sixty years since; but, from its tameness, it had possibly escaped from a falconer. In Norfolk one was killed, according to Mr. Stevenson, in February 1848, near Cromer; and other large white Falcons have been seen in that county as well as in Suffolk. In Yorkshire there is Mr. Hancock's excellent authority for the occurrence of one, which was wounded near York in February 1837, and kept alive for some time by Mr. Allis; and Mr. Roberts has recorded (Zool. p. 4558) one which was killed in Robin Hood's Bay in November 1854. A young male killed in Islay, in February 1838, has come under Mr. Hancock's inspection; but at least four are mentioned by Mr. Robert Gray in his work as having been killed of late years in the Hebrides; while two more have, on the same authority, occurred in other parts of Scotland—one in Lanarkshire in 1835, and the other, an immature male, now in Mr. Newcome's collection, in Perthshire in the spring of 1862. The example described and figured in Pennant's 'British Zoology,' was said to have been shot near Aberdeen; and the engraving shows it to have been a young bird. Messrs. Salvin and Brodrick, in their work before cited, also state that on two occasions, about 1840, a large white Falcon was seen in Ross-shire, and that in 1850 Messrs. St. John and Hancock saw a Greenland Falcon near Elgin. On the 3rd March 1866, according to Dr. Saxby (Zool. s. s. p. 288), a female was shot on Balta, one of the Shetlands; and this example is now in the collection of Mr. J. H. Gurney, jun. In Ireland, Thompson mentions one killed more than thirty years since in Donegal, and subsequently a second, shot at Drumboe Castle, in the same county. Mr. Blake-Knox has recorded a third Irish specimen, which is in the Museum of the Dublin Natural-History Society, and appears to have been killed in the winter of 1862–63."

In Greenland the present species is the predominant form in the northern districts, the Iceland Falcon being, if any thing, more numerous in the southern portions of that country. It visits Iceland in some numbers in the winter season; but, so far as can be ascertained, it does not breed there, being, as a rule, absent in the summer season, though Herr Preyer mentions one instance of its occurrence in Iceland at that season.

In Scandinavia it does not appear to have occurred, and is replaced by *Falco gyrfalco*; but the present species is certainly found in Spitzbergen; for Mr. A. Benzon informs me that he possesses an undoubted example received from there. It has been so frequently confused with its allies, *Falco gyrfalco* and *Falco islandus*, that it is impossible to state, with any degree of certainty, if it has ever been obtained on the continent of Europe; but it appears somewhat doubtful. It probably may be found on Novaya Zemlya, and possibly in the northern portions of Russia, but only as a rare straggler. It certainly occurs in Northern Siberia; for the specimen obtained by Dr. Maack at Nertschinsk, on the Amoor, in March 1855, and referred to by Von Schrenck, certainly belongs to the present species, as is clearly shown by the description given by Dr. von Schrenck, which I translate as follows:—"The general colour is white, the moustache is scarcely defined; on the head are fine dark shaft-stripes, and on the neck and breast similar but rather larger stripes. The underparts are white, marked with a few greyish brown shaft-stripes, and the flanks are marked with similar lancet-shaped spots; back white."

According to Professor Schlegel the present species is known to the Japanese; and in

America it inhabits the extreme northern districts, where it appears to be met with right across the continent; and Mr. Ridgway says that it is of irregular occurrence in winter throughout the circumpolar regions. Mr. Bannister writes (Trans. Chic. Acad. Sci. i. p. 271) as follows:—"I learned from the residents of St. Michael's that a species supposed to be this one is not unfrequent, though it did not come under my own observation. On the voyage home, however, on the 21st of October, 1866, when off the coast of Kamtschatka, a little north of Behring's Island, one of these birds alighted in the rigging." It is stated to be met with not unfrequently in Canada during the winter; and my brother informs me that he has seen several examples which were shot near Ottawa. According to Mr. Reeks it is also a tolerably regular autumn visitant to Newfoundland; and, judging from the specimens I have seen sent from there, it cannot be rare in Labrador.

I have unfortunately been unable to procure any details respecting the nidification of the present species; but doubtless it does not differ much from its allies, *Falco islandus* and *Falco gyrfalco*, in its mode of nidification. It breeds in the more northern portions of Greenland and of North America. From the former country I have received through Herr Justitsraad Erichsen and Mr. A. Benzon several eggs of the present species, which closely resemble those of *Falco gyrfalco*, but seem, as a rule, to have a slightly rougher texture of shell than the eggs of that species. The Greenland Falcon used formerly to be most highly prized for falconry; and very large prices were paid for birds of the present species obtained in Iceland. Professor Newton gives, in the new edition of Yarrell's 'British Birds,' some most interesting details on this head, chiefly culled from Professor Schlegel's 'Traité de Fauconnerie,' which, however, I need scarcely recapitulate here.

The specimens figured are an old female in the whitest stage of plumage, on another Plate an adult bird in the darker and more strongly marked stage of plumage in the foreground to the right, and in the background to the left a young bird of the lightest form, showing the longitudinal markings on the back.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, b, ♀ *ad., c, d,* ♀ *juv., e, f,* ♂ *juv.* Greenland. *g,* ♀ *ad.* Iceland (*A. Benzon*). *h,* ♀ *ad., i, k, juv.* Labrador (*Möschler*).

E Mus. Brit. Reg.

a, b. Greenland (*Gould*). *c, d, e, f.* Lichtenfels, S. Greenland (*Dr. O. Finsch*). *g, h, i.* Labrador (*Gould*). *k.* N. America (*Hudson's-Bay Co.*). *l.* N. America (*Sir A. Bach*).



J.G.Keulemans lith.

M.& N. Hanhart imp.

ICELAND. FALCON
YOUNG



J.G.Keulemans lith

M.& N.Hanhart imp

ICELAND FALCON.
FALCO ISLANDUS

FALCO ISLANDUS.

(ICELAND FALCON.)

Accipiter falco islandicus, Briss. Orn. i. p. 336 (1760).
Accipiter gyrfalco islandicus, Briss. tom. cit. p. 373, pl. xxxi. (1760).
Le Gerfaut d'Islande, D'Aubent. Pl. Enl. 210 (1770).
Falco islandus, Gmel. Syst. Nat. i. p. 271 (1788).
Hierofalco islandicus, C. L. Brehm, Vög. Deutschl. p. 55 (1831).
Falco islandicus, Hancock, Ann. Nat. Hist. ii. p. 247 (1839).
Falco candicans islandicus, Schl. Abh. Geb. Zool. p. 14 (1841).
Falco arcticus, Holb. Zeitschr. ges. Naturw. iii. p. 426 (1854).
Falco gyrfalco islandicus, Schl. Mus. Pays-Bas, Falc. p. 14 (1864).
Falco holbœlli, Sharpe, P. Z. S. 1873, p. 415.
Hierofalco holbœlli, Sharpe, Cat. Accip. p. 415 (1874).

Falki, *Veiðifalki*, *Valur*, Icelandic; *Fálkur*, Færoese; *Jagtfalk*, *Islandsk-Falk*, Danish.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 210; Naumann, Vög. Deutschl. taf. 22. figs. 1, 2, taf. 390. fig. 2; Salvin & Brod. pl. 11; Sharpe, Cat. Accip. pl. 13, left figure; Gould, B. of G. Brit. i. pls. 11, 12.

Ad. fronte albâ nigro-fusco striatâ: pileo, nuchâ et collo postico albis, plumis centraliter nigro-schistaceis: dorso et alis suprà saturatè fusco-schistaceis, albido et albo-cervino fasciatis: uropygio et supracaudalibus schistaceo-cæruleis, pallidè cinereo-cano fasciatis: remigibus schistaceo-nigricantibus, extùs cervino-albo notatis et in pogonio interno eodem colore fasciatis: caudâ cinereâ, fusco-schistaceo fasciatâ et albo terminatâ: mento et gulâ albis, gutture nigro-fusco striato: corpore reliquo subtùs albo, guttis nigro-fuscis notato, hypochondriis in parte superiore conspicuè eodem colore maculatis et in parte imâ fasciatis, subcaudalibus pallidè schistaceo fasciatis: rostro cæruleo-corneo, versus apicem saturatiore: cerâ et pedibus flavis: iride fuscâ.

Juv. Falconi gyrfalconi similis sed capite pallidiore, striâ mystacali nullâ, corpore suprà et caudâ saturatioribus et hâc minùs fasciatâ.

Adult Male (Greenland). Forehead white, striated with blackish; crown and nape dull white, the centres of the feathers slaty black, the hind crown having these centres to the feathers very fully developed; back, scapulars, secondaries, and wing-coverts dark slate with a brownish tinge, more or less regularly barred with white, or white with a buff tinge; rump and upper tail-coverts dull slate-blue, barred with blue-grey; quills slaty blackish, marked on the outer web and barred on the inner web with buffy white; tail ashy grey, barred with dark blackish or brownish slate, and tipped with white, the outer rectrices having a whiter ground-colour than the central ones; sides of the head like the crown; chin and upper throat white; lower throat streaked with blackish brown; rest of the underparts white,

marked with blackish brown stripes which terminate in a drop-shaped spot, lower flanks barred somewhat broadly, the upper flanks being marked with rather large heart-shaped spots; under tail-coverts rather irregularly barred; bill bluish horn, darkest at the tip; cere and legs yellow; iris dark brown. Total length about 21·5–22 inches, culmen 1·35, wing 14·5, tail 8·9, tarsus 2·3.

Female. Resembles the male, but is larger, measuring—total length 24–24·5 inches, culmen 1·52, wing 16·3, tail 9·95, tarsus 2·4.

Young (Öfjord, Iceland). Differs from the young of *Falco gyrfalco* merely in having the head rather lighter and lacking the blackish moustachial streak which the young of that species has; and the young of the present species appears always to have the back and tail less marked with lighter colour, the tail especially being less barred than the young Jer Falcon.

Nestling (Iceland). Covered with white down, slightly tinged with primrose.

So far as I can ascertain, the present species has a more restricted range than either the *Falco gyrfalco* or *Falco candicans*; for it inhabits Iceland and Southern Greenland, whence it straggles to Northern Europe; and it is also met with on the east coast of North America.

This species of northern Falcon has occurred, perhaps, somewhat less frequently in Great Britain than the Greenland Falcon; but as both have been recorded under the same name, it is somewhat difficult to determine to which species the various recorded occurrences refer. Professor Newton, who has probably gone more carefully into the question than any one I know, writes (Yarr. Brit. B. ed. 4, i. p. 49) as follows:—"As regards England, Thompson quotes from a letter of Mr. Hancock's the occurrence of a young bird at Billingham, on the North Tyne, in January 1845, which was then in the collection of Mr. Charles Adamson, of Newcastle; and this capture is also recorded by Mr. Bold in the 'Zoologist' for that year. The same letter also notices an Iceland Falcon, in its first plumage, killed at Normanby, near Guisborough, in Yorkshire, in March 1837, of which a brief description by the late Mr. Hogg appeared in the volume of the useful periodical just mentioned. Both these birds are now in Mr. Hancock's collection. Mr. Borrer possesses an adult Iceland Falcon shot at Mayfield, in Sussex, in January 1845. These, with an immature specimen in the Norwich Museum, killed at Inverbroome, in Ross-shire, 1851—probably one of those already included by Mr. Gray—and a young male from Scotland, in the possession of Mr. Gurney, jun., are all the British examples which at the present time can be, with any amount of certainty, referred to the Iceland Falcon." To this I may add that Mr. A. Clapham informs me that he possesses a male killed on Filey Brigg, and a young female shot at Poppleton, near York; and I am indebted to Mr. Cecil Smith for the following note:—"I do not know of the occurrence of either this or the Greenland Falcon in Somerset. In the Channel Islands it may have occurred more than once, as Professor Ansted, in his list of Channel-Island birds, mentions the Gyr Falcon as having occurred in Guernsey, but does not say to which of the three species formerly included under the general name Gyr Falcon he alludes; nor does he give any description, or state where the bird is now to be seen. Mr. Couch, the bird-stuffer in Guernsey, however, recorded in the 'Zoologist' for 1876 the fact of either an Iceland or Greenland Falcon having been shot by the gamekeeper at the little island of Herm on the 11th of April of that year. As I was in Guernsey in the June following I saw and obtained the bird. It is an

adult Iceland Falcon; and Mr. Couch informed me he had found it to be a male by dissection. I was also informed that it had been seen about by the keeper for some little time in company with another similar bird. The small island of Herm, about three miles from Guernsey, is rented by a gentleman who occupies it mostly for the purpose of shooting and game-preserving, and amongst other things rears a good many Pheasants; these the two Falcons seem to have found very fine eating, as the keeper saw them kill several Pheasants; at length, getting savage at seeing hen Pheasants killed just at the beginning of the breeding-season, he watched for a shot, and at length, as the birds had become rather less wary than they were at first, got a shot at and obtained this bird." Referring to the occurrence of this Falcon in Scotland, Mr. Robert Gray states (B. of W. of Scotl. p. 22):—"Between 1835 and 1851 several specimens of this Falcon were shot in Ross-shire, Sutherlandshire, and Inverness-shire; and within the last four years I have satisfied myself that four or five have been shot in the west of Scotland. One was killed by Captain M'Rae on the island of Vallay, Outer Hebrides, in September 1865. It haunted the farmyard for some time, and was quite fearless in its attacks among the poultry, killing a great many chickens before it met its fate. This bird is now in the collection of Dr. Dewar, of Glasgow. Another, a fine male, had been shot in October of the previous year in North Uist by Allan M'Lean, gamekeeper there; and a third Hebridean specimen was found washed ashore dead on the west side of the island about the same time, but was not discovered until it had been disfigured by Hooded Crows. It has likewise occurred on the inner islands, as I have been informed by Mr. Elwes, who writes that 'one which was shot in Islay is now in the museum at Islay House.' In September 1866 another fine Iceland Falcon was caught in a pole-trap at Glendaruel, Argyleshire; but unfortunately this bird was lost, the trap not having been looked at for some days after it was sprung. The species, however, was identified beyond a doubt."

Dr. Saxby also writes (B. of Shetl. p. 15) as follows:—"Until within the last fifteen years, the Iceland Falcon used to visit these islands, Unst especially, with some regularity, between autumn and spring, usually after a snow-storm accompanied by a heavy gale; now, however, two or three years may pass without the appearance of a single individual being recorded. I saw the last in February 1871, when two, possibly a pair, visited Balta Sound, and remained there several days, keeping mostly near the beach, and feeding upon the Snipes and Starlings which had been driven from inland by the frost. I kept them under careful and almost constant observation, and could distinguish but little difference between their habits and those of the Greenland Falcon, except that these, although occasionally coming near the pigeon-boxes and poultry-yards, seemed more inclined to avoid the haunts of man. Although the two birds were seldom more than half a mile or a mile apart, each hunted independently for itself. Once, when the larger of the two struck a Rock-Dove into the water, the other came up hurriedly, but whether with a selfish motive or with a desire to render assistance is uncertain. Both, however, hovered about the victim for nearly a quarter of an hour, but without attempting to recover it. In 1858 I was shown the moth-eaten and otherwise dilapidated skin of a male which had been killed in Unst about a year previously, and in the autumn of the same year was barely able to recognize the remains of one among the drift upon the sands at Norwick. I have only had one other in my

hands. It was shot at Burravoe, in the island of Yell, in March 1868, while sitting upon a wall devouring a tame Pigeon."

To the continent of Europe the present species straggles but rarely. So far as I can ascertain, it has not occurred in Scandinavia, being there replaced by *Falco gyrfalco*; but is found in the Færoes, where, according to Captain Feilden, it is by no means uncommon in the winter months, but has not been known to breed there. Mr. A. Benzon informs me that either this species or *Falco gyrfalco* now and again occurs in Denmark, but he cannot determine which, as they are almost always in immature dress; but it is stated to have occurred in Holland and Germany. It appears doubtful if the present species has ever occurred in Asia, though several authors record it from there. Greenland and Iceland, especially the latter, appear to be its true home. Professor Newton says that it "is probably of universal occurrence in Iceland, but certainly more common near Myvatn than anywhere else in the island, owing perhaps to the great facilities for breeding afforded them by the inaccessible precipices in the neighbourhood, and to the abundance of food in the immediate vicinity." In Greenland it is stated to be tolerably common in the southern portions of the country, where it breeds; but in the north it is replaced by *Falco candicans*.

I have seen several specimens from the eastern side of North America; but the species found in other portions of North America is certainly not the Iceland Falcon, but the true Jer Falcon, precisely similar to the Norwegian bird. I possess examples of the Iceland Falcon from Labrador, where, however, it would appear to be a straggler, the resident species there being *Falco labradorus*.

In habits the present species does not differ from its allies the Greenland Falcon and the Jer Falcon; but though swift and strong on the wing, and formerly highly valued for falconry, it is, Messrs. Salvin and Brodrick say, by no means up to the high standard one would naturally expect it to be. Some trained at Mr. Newcome's failed, they say, in taking hares, and only one or two out of the number proved good Heron-Hawks. The present species, these gentlemen write, "was formerly used in this country for flying the Fork-tailed Kite, which forty or fifty years ago was a common bird in many districts, although now so seldom seen. This sport was much followed by the Earl of Orford and Colonel Thornton about the year 1773, and by Mr. Colquhoun, of Wretham near Thetford, about 1785. Brandon warren, in Norfolk, and the neighbourhood of Alconbury Hill, in Huntingdonshire, were favourite localities for Kite-hawking. Sir John Sebright relates the mode in which this sport was carried on, viz. that the great Owl (*Strix bubo*), to the leg of which the falconers attached a fox's brush, was thrown up for the purpose of drawing the Kite down, upon which the Falcons were slipped at him. This Falcon was also sometimes employed in taking hares. Many, however, consider all ground-game quite beneath the notice of a bird possessing such power of wing as a Falcon, and would leave it entirely to the Goshawk. At the present day Iceland Falcons that are trained to '*wait on*,' might be used for Grouse- and Blackgame-hawking, as also for Herons, Wild Geese and Ducks, and probably also for Gulls, Rooks, &c."

The Iceland Falcon is a stouter-built and larger bird than the Greenland and Jer Falcon; and the tail is proportionally shorter, the wings longer, and the head much larger. Professor Newton, quoting from Mr. Hoy, carefully points out these distinctions, as also the difference in

the sternum, and writes as follows:—"The head is larger, so much so that, in modelling the hoods for trained birds of the two kinds, falconers use different blocks. Whether all these distinctive features can be established on the comparison of a large series of specimens, is perhaps uncertain; but it does appear that in some parts at least of the structure of the two forms there exists a remarkable difference of proportion, which does not seem to have been hitherto noticed. The average length of the sternum and coracoid in *Falco islandus*, as ascertained by the careful measurement of six female specimens, not specially selected for the purpose, in the Museum of the University of Cambridge, is 5·46861 inches, while the average length of the same bones in as many specimens of *F. gyrfalco* of the same sex, and in the same Museum, is 5·06383 inches. This would at once show that the Icelander has the longer body of the two by nearly half an inch; but the difference becomes more striking when it is found that the breadth of the sternal apparatus does not vary in accordance with its length, being absolutely broadest in the Gyr Falcon, and, further, that the disproportion is chiefly caused by the elongation of the coracoid bones in the Icelander, where the sternum alone has an average length of 3·65608 inches against 3·47143 inches in the true Gyr Falcon."

After a careful examination of the series in the British Museum, as well as that at Norwich, I cannot agree with Mr. Sharpe in assigning specific rank to the lighter-coloured examples of this species: and I feel sure that in one instance at least he has included the Greenland Falcon as *Falco holbœlli*; for an example which he figures in his catalogue (pl. 13, right-hand figure), nearly as white as any Greenland Falcon, is, in my opinion, true *Falco candicans*. This specimen was received from Mr. Gould, who labelled it as coming from Iceland; and I can well believe that such was the case, as I possess a specimen closely resembling it, which was most certainly shot in Iceland; but Mr. Gould, on being questioned, was not quite certain as to whether it really did come from that island, and Mr. Sharpe therefore altered the locality from Iceland to Greenland. So far as I can gather, Holböll's *Falco arcticus* was true *F. islandus*; and this is borne out by information received from Mr. Bond, who assures me that he has seen numerous examples sent over by Governor Holböll, all of which were ordinary dark Iceland Falcons. Like the Greenland Falcon the present species is subject to considerable variation in shade of colour; but the palest specimen I have seen is much darker on the upper parts than the Greenland Falcon, has the upper parts washed with blue-grey, the light markings smaller than the darker portions of the plumage, and the inner webs of the primaries and the tail very distinctly and strongly barred.

Like the Greenland Falcon the present species nests in the cliffs, usually choosing a place which is very difficult of access. Mr. Hewitson, writing respecting Mr. Proctor's visit to Iceland, says:—"He had gone out for the purpose of collecting birds and their eggs, but did not reach the favourite localities of the Iceland Falcon till the broods were flown. This was in the beginning of August, when he shot several full-grown young ones, and found some of the deserted nests; the one from which he took the egg then drawn was composed of sticks and roots, lined with wool, amongst which the egg, a rotten one, was embedded. He supposes that the nest may have been that of a Raven, which is most probable, as it resembled one. The remains of many birds (Whimbrels, Golden Plovers, Guillemots, and Ducks) lay strewed about the nest. This nest and others which Mr. Proctor saw were all in the cliffs forming the boundaries

of freshwater lakes, but none of them so high in the mountainous districts as he expected to have found them." Mr. Benzon informs me that the eggs, usually four, and sometimes only three in number, are deposited early in May, and that the young when hatched are very plentifully supplied with food by their parents.

Eggs of the Iceland Falcon in my collection vary exceedingly; the ordinary run of the series I possess are pale yellowish clay-white, so closely marked with reddish orange as almost to appear uniform reddish orange in colour; some, however, are white, somewhat sparingly blotched all over with reddish orange; some are more profusely blotched with dull (almost chestnut) red; and one is almost uniform dull rufous clay-coloured. In size they vary from $2\frac{8}{40}$ by $1\frac{31}{40}$ and $2\frac{14}{40}$ by $1\frac{28}{40}$ inch to $2\frac{18}{40}$ by $1\frac{36}{40}$ inch.

The specimens figured are an adult bird on the one Plate and a young bird on the other Plate, both being those above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♀ *juv.* Iceland (*J. Baker*). *b*, ♂ *juv.* Öfjord, Iceland, 1871 (*A. Benzon*). *c*, ♂ *ad.* Greenland. *d*, *juv.* Greenland (*Möschler*). *e*, ♂ *ad.*, *f*, ♀ *juv.* Greenland (*A. Benzon*). *g*, ♂ *juv.* Labrador (*Möschler*).

E Mus. Feilden and Harvie-Brown.

a, ♀ *ad.* Akureyri, Iceland, November 7th, 1871 (*A. Benzon*).

E Mus. A. Benzon.

a, *pull.* Iceland, 1871.

E. Mus. Brit. Reg.

a, *b*, *c*. Iceland (*J. Gould*). *d*, *e*. Greenland (*H. Saunders*). *f*. Fiskenæsset, Greenland.



J.G. Keulemans del

Mintern Bros imp

PEREGRINE.

FALCO PEREGRINUS

FALCO PEREGRINUS.

(PEREGRINE.)

Accipiter falco, Briss. Orn. i. p. 321 (1760).
Accipiter falco hornotinus, Briss. tom. cit. p. 324 (1760).
Accipiter falco peregrinus, Briss. tom. cit. p. 341 (1760).
Le Faucon sors, Buff. Hist. Ois. i. p. 254, pl. xv. (1770).
Le Faucon hagard, Buff. tom. cit. p. 254, pl. xvi. (1770).
Falco peregrinus, Tunstall, Ornithologia Britannica, p. 1 (1771).
Oriental Hawk, Lath. Gen. Synop. i. p. 34 (1781).
Behree Falcon, Lath. Gen. Synop. Suppl. p. 35 (1787).
Falco orientalis, Gm. Syst. Nat. i. p. 264 (1788, ex Lath.).
Falco communis, Gm. tom. cit. p. 270 (1788).
Falco hornotinus, Gm. tom. cit. p. 270 (1788).
Falco peregrinus, Gm. tom. cit. p. 272 (1788).
Falco calidus, Lath. Ind. Orn. i. p. 41 (1790).
Falco lunulatus, Daud. Traité d'Orn. ii. p. 127 (1800).
Falco abietinus, Bechst. Naturg. Vög. Deutschl. i. p. 759 (1805).
Falco pinetarius, Shaw, Gen. Zool. vii. p. 195 (1809).
Falco gentilis, Wils. Mem. Wern. Soc. ii. p. 587 (1818).
Falco cornicum, C. L. Brehm, Vög. Deutschl. p. 62 (1831).
Falco griseiventris, C. L. Brehm, Isis, 1833, p. 778.
Falco anatum, Bp. Comp. List, p. 4 (1838).
Falco micrurus, Hodgs. in Gray's Zool. Misc. p. 81 (1844).
Falco nigriceps, Cass. Illust. B. Calif. p. 87 (1855).
Falco leucogenys, C. L. Brehm, Vogelfang, p. 26 (1855).
Falco atriceps, Hume, Ibis, 1869, p. 356.
Falco brookii, Sharpe, Ann. Nat. Hist. xi. pp. 20, 222 (1873).

Sheabhag, Gaelic; *Faucon pèlerin*, French; *Falcão*, Portuguese; *Alcón*, Spanish; *Falcone*, Italian; *Teir-el-hor*, Moorish; *Tauben-Falke*, *Wander-Falke*, German; *Valk*, *Slechtvalk*, Dutch; *Vandringsfalk*, Danish; *Kirksoviarsukmillekulartok*, Greenlandic; *Pilegrimsfalk*, Norwegian; *Pelegrimsfalk*, Swedish; *Muuttohaukka*, Finnish; *Sapsan*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 421, 470; Werner, Atlas, *Rapaces*, pl. 9; Kjærb. Orn. Dan. taf. ii.; Frisch, Vög. Deutschl. taf. 83; Fritsch, Vög. Eur. taf. 10. figs. 8, 9; Naumann, Vög. Deutschl. taf. 24, 25; Sundevall, Svensk. Fogl. pl. 26. fig. 2; Gould, B. of Eur. pl. 21; id. B. of G. Brit. i. pl. 17; Schlegel, Vog. Nederl. pls. 1, 2, 3; Audub. B. of Am. pl. 20;

Wilson, Am. Orn. pl. 76; Salvin & Brod. Falconry, pls. 1–5; Schlegel & Verst. Traité Fauc. pls. 11, 12.

♂ *ad.* capite, nuchâ, collo postico, capitis lateribus et maculâ sub oculo longitudinali fusco-nigricantibus, pilei plumis nonnullis centraliter saturatioribus, dorso et tectricibus alarum cinereo-cærulescentibus fusco transversim fasciatis: remigibus nigricantibus, in pogonio interno maculis oblongis transversis albicantibus notatis, secundariis intimis dorso concoloribus: uropygio et supracaudalibus magis cærulescentibus: caudâ nigro-fuscâ, valdè cinereo fasciatâ et albido apicatâ: corpore subtùs albo vix cervino tincto, gulâ et pectore summo nigro-fusco guttatis, pectore inferiore, abdomine, femoribus et crisso transversim nigricante undulatis: cerâ et pedibus flavis: rostro saturatè corneo-cæruleo, ad basin pallidiore: iride fuscâ.

♂ *juv.* suprà saturatè fuscus, marginibus pennarum ferruginescentibus, fronte et pileo antico albidis, nuchâ et collo postico rufescente albido notatis: remigibus primariis ut in adulto picturatis sed albido marginatis, secundariis dorso concoloribus: mento albo: corpore subtùs albido, rufescente cervino lavato et conspicuè nigro-fusco striato: caudâ nigro-fuscâ, albido apicatâ, rectricibus in pogonio interno ochraceo fasciatis et in pogonio externo maculis oblongis transversis notatis: cerâ et pedibus cæruleis: rostro et iride ut in adulto coloratis.

Adult Male (near Stettin). Crown, nape, hind neck, sides of the head to below the eye, and a large moustachial patch sooty black, some of the feathers on the crown having slightly darker centres; back, scapulars, wing-coverts, and secondaries dark slate-blue, with darker, almost blackish slate bars, which are much broader on the upper part of the back, and become narrower below; the lower portion of the back much lighter, becoming slate-blue on the rump and upper tail-coverts, which latter have also darker cross bars; primaries black with a greyish tinge, on the terminal portion slightly edged with white, and on the inner web marked with oblong greyish white spots; tail blackish with slate-blue broad bars at the base, which gradually become darker slate towards the tip; extreme tip of the tail brownish white; underparts white with a warm rufous-uff tinge] ; throat and upper breast marked with only a few stray long drop-shaped markings; rest of the underparts boldly barred with blackish; cere and legs yellow; iris brown; bill dark bluish horn, becoming light blue at the base. Total length about 15·5 inches, culmen 1·1, wing 12·2, tail 6·4, tarsus 2·2, middle toe with claw 1·7.

Adult Female (Macedonia, 9th December). Resembles the male above described, but is larger, measuring—total length 19·5 inches, culmen 1·4, wing 14·0, tail 7·8, tarsus 2·3, middle toe with claw 2·05.

Young Male (Volga, May). Crown, sides of the head, and moustachial patch black with a brownish tinge, the fore and centre parts of the crown conspicuously marked with dirty white; nape and hind neck marked with pale rufous or reddish white; upper parts blackish brown, the feathers having narrow lighter edges; rump-feathers with fulvous tips and edges, the upper tail-coverts having these tips broad and nearly white; tail dark brown with a greyish tinge, tipped with white, and marked with bands on the inner web, and almost oval spots on the outer web of the feathers of a warm ochreous or reddish buff tinge; primary quills as in the adult, but with rather broader whitish edges, secondaries coloured like the back; chin white; rest of the underparts white with a warm rufous buff tinge, broadly striped with blackish brown; cere and feet bluish; bill and iris as in the adult.

Few of the Raptores have so extensive a range as the present species, which is met with from the icy mountain-ranges of Greenland down to the parched wastes of South Africa, throughout

the whole of Asia down to Java and Sumatra, and in the Nearctic Region from the Hudson's Bay territory as far south as the Argentine Confederation.

It is still found in Great Britain, though in greatly diminished numbers compared with what it formerly used to be. Professor Newton (Yarr. Brit. B. ed. iv. p. 59) writes as follows:— "In this country it still breeds, chiefly on the cliffs of the sea-coast throughout the south of England, from Cornwall to Kent. Formerly there was annually a nest in the cliff at Hunstanton, and one in the steeple of Corton church in Suffolk; and it is registered by Mr. More as breeding until a few years ago in the district of the Severn, where, indeed, it may possibly still be found as an occasional permanent inhabitant. On the coast of Wales, particularly in the south-west and north of the principality, it may be regarded as breeding regularly, and again from Yorkshire northward to the Shetlands; but it is far more thinly scattered in the south than in the north of Great Britain, and is not at all unfrequent on the rocky headlands of the north and west coasts." With respect to its occurrence on the south coast of England I am informed by Mr. Gatcombe that "it is occasionally both shot and trapped in the neighbourhood of Plymouth, and a few still breed on the coasts of Devon and Cornwall. In May last one took up its quarters in the midst of a colony of breeding Herring-Gulls among the cliffs at Wembury, near the mouth of the river Yealm, a few miles from Plymouth, where I feel almost sure it also had a nest, from the anxiety it seemed to show, constantly flying round and round one particular spot, and making a tremendous noise until I left the place. It was often attacked by a Raven breeding in the vicinity; and an irate Herring-Gull would now and then try to drive it off; but the Falcon would persistently return to the same spot. A pair used to nest annually at Beer Head, on the coast near Sidmouth; and a few months since the remains of a fine specimen were sent to me from Seaton in the same locality. I have within the last few years examined several examples, both adult and young, which have been sent to our bird-stuffers, and a few nestlings in the down, alive."

It may still breed, I believe, in the Isle of Wight; and Mr. G. Dawson Rowley, writing in 1860, says (Ibis, 1860, p. 200) that three nests came under his notice—one in the cliff near Seaford, and two at the back of the Isle of Wight. "Four eggs were obtained at Freshwater, and both Falcon and Tiercel, alas! caught in one day." Writing respecting its occurrence in Dorsetshire, Mr. J. C. Mansel-Pleydell says that it "breeds at Gadcliff in Purbeck, and further westward at Whitenore. It would probably have been extirpated long ago but for the inaccessibility of its strongholds of refuge;" and Mr. Cecil Smith informs me that it would be tolerably common in Somersetshire were it not for the gamekeepers, who shoot and trap it on every possible occasion. In spite, however, of this constant persecution, a few pairs breed every year in such parts of the county as are suited to them. Writing to me from Oundle, Northants, Lord Lilford says, "I am persuaded that this splendid Falcon is much more common in England than is generally believed, although no doubt many of its former breeding-places on our coasts are now no longer tenanted; we have a large share of the autumnal passage of Falcons from the north, which in days gone by supplied Europe with these birds caught on the heaths of the Netherlands. In this county (Northants), from about the time of the autumnal equinox till the end of April, and occasionally much later, I can make pretty sure of seeing one or two Peregrine Falcons any day. Their principal quarry in this neighbourhood consists of wild fowl

and Wood-Pigeons. I saw one, a fine adult male, shot whilst in pursuit of a Fieldfare, and once witnessed a fine flight by a Peregrine after a Starling high in air: after eight unsuccessful stoops the Starling was clutched and carried off to the topmost bough of a very high ash tree, where in less than two minutes the captor was robbed of his prey by another bird of his own species. Often when exercising my trained Falcons in this immediate neighbourhood, a wild one has come to look on, and my falconer has twice taken immature Falcons here with the bow net and Pigeon, aided by an Ash-coloured Shrike (*L. excubitor*), in the manner so graphically described in Freeman and Salvin's 'Falconry,' p. 97. To cite instances of the capture and slaughter of this fine species in this county would be tedious and unnecessary; suffice it to say that I consider it the most common of our diurnal Raptores, with the exception of the common Kestrel. I have met with the Peregrine in every county of England, Wales, Scotland, and Ireland that I have visited in the autumn and winter, and one summer, not many years ago, had offers of young Peregrines from no less than nine eyries in various parts of Great Britain; so that I have every reason to believe that there is no fear of, at all events, a speedy extinction of this species." On the east coast of England it is met with almost only during passage. Mr. Stevenson says that he knows no recent instance of its breeding in Norfolk, though, according to Mr. Cordeaux, it "nests at Flamborough, and there were two eyries of the Peregrine on the Speeton cliffs, on the north side of the headland, in the summer of 1867." In Scotland it still occurs, not uncommonly, and is tolerably widely distributed. Mr. Robert Gray writes (B. of W. of Scotl. p. 23) as follows:—"Although subjected to an extraordinary amount of persecution, this beautiful Falcon maintains a good hold throughout those districts in which it has been well known for centuries, and may still be called a common bird in many districts of Western Scotland, ranging from Burrow Head to Cape Wrath.

"In mountainous and rocky tracts on the inner islands and mainland of Argyle, Inverness, Ross, and Sutherland shires it is found commonly in pairs, each frequenting a radius of about six or eight miles. In Islay, Mull, and Jura, as well as the islands of minor extent, it is about equally distributed, but is much more plentiful in Skye and its outlying stacks of rock, whose precipitous sides afford abundant shelter and protection. It is also comparatively common in the Outer Hebrides, breeding on the higher hills. I have traced it from Barra to Lewis, and have seen it on all the intervening islands. Mr. John M'Donald, of Newton, North Uist, imforms me that he has seen the Peregrine during the breeding-season on the Haskeir rocks, between Harris and St. Kilda, and on St. Kilda itself, where there are several pairs.

"As we leave these isolated and almost inpregnable fortresses of the Peregrine, and approach the mainland, we find that the ravages of keepers and collectors have of late years greatly thinned its numbers. Among the deserted eyries of the south-western counties may be mentioned Dumbarton rock, and at least three or four stations on the cliffs between Giroan and the entrance to Loch Ryan, including that on Knockdolian Hill.

"There are still many pairs to be found in the vicinity of Ben Lomond and on the mountain-ranges stretching from the head of Loch Long both to the north and west. From these districts and other parts of Argyleshire, as well as the island of Arran, considerable numbers of Peregrines are sent in to the Glasgow birdstuffers. In Ayrshire several inland haunts, such as the parish of Straiton, are yet frequented; the same may be said of Wigton-

shire, in which county, however, the eyries at Mull of Galloway, Port Patrick, and Burrow Head are now all but abandoned."

The Peregrine does not appear to occur in Iceland; but, according to Professor Newton, it is said to breed generally throughout Greenland, certainly up to lat. 69° N., and in many of the islands to the westward of Baffin's Sea. Examples obtained by Dr. Walker, of the 'Fox' R.Y.S., at Port Kennedy (lat. 72° N.), are specifically undistinguishable from European specimens. Dr. Otto Finsch also, in some interesting notes on a collection of birds from South-west Greenland, remarks that examples from there closely agree with others from the mainland of Europe; but I cannot agree with him in uniting *Falco melanogenys*, Gould, with our European Peregrine.

Mr. H. C. Müller records but one instance of its occurrence (at Kollefjord, in September 1867) in the Færoes; but it is common in Scandinavia. Mr. Collett says that it breeds here and there both in the interior of Norway as far north as South Varanger and Vadsö, and on the coast up to the Lofoten Islands. In South Norway it passes up into the alpine region in summer, and is found throughout the entire range of the Jotunfjeld and Dovre; but it also breeds here and there in the lowlands, as for instance in the Christiania valley and Smaalehnene. Pastor Sommerfelt says that it is a rare bird on the Varangerfiord, and that it is doubtful if it breeds there. In a letter lately received Mr. Collett informs me that on two occasions Mr. Nordvi obtained a clutch of four eggs of a Falcon, taken in a mountain at Næsseby in Finmark, which are less than those of the Peregrine, but larger than those of the Hobby. Two of these eggs, now in the collection of Mr. H. Seebohm, I have seen, and am unable to state with certainty to what species they belong; but they certainly appear to me to be only abnormally small Peregrine's eggs. Professor Sundevall states that the Peregrine breeds on the Swedish side as far north as Njunnatsfjeld, near Quickjock, in 67° N. lat., and at Juckasjärvi in 68° N. lat.; and in Finland it is tolerably widely distributed throughout the country. I met with it in most parts of the country, but only found it breeding in the high north. In Russia it ranges far north. I have received it from near Archangel; and Messrs. Harvie-Brown and Seebohm obtained it on the river Petchora.

Mr. Sabanäeff says that it is generally distributed in the Governments of Moscow, Smolensk, Jaroslaf, and Vladimir, and is frequently seen on the spires in the city of Moscow. In the Tula Government it is rare, is found in that of Orloff during passage, and is but seldom seen in the Kieff Government. It breeds near Moscow. In the Ural he met with it exclusively in the mountains.

I have met with the present species in the Baltic provinces, and in all parts of North Germany I have visited, and have several times obtained its eggs from Pomerania, where it would appear to breed not unfrequently. Professor Kjærbölling says it is neither rare nor common in Denmark, where it is also found breeding. And it breeds in some portions of Western Germany; for Mr. Carl Sachse informs me that its nest is sometimes found in inaccessible cliffs on the Rhine. Mr. H. M. Labouchere writes to me that it has never yet been found breeding in Holland, but it visits that country annually, arriving from the north-east during the months of October, November, and December, and repassing it in March or April, when they return to their breeding-places. Most of the specimens seen there are young birds.

Baron von Droste Hülshoff states that it "arrives in Borkum about September, following the migrating Ducks, and leaves the island also together with them. From the above-mentioned time up to the middle of November these Falcons increase here in numbers; but after that period they again get rarer, until they quite disappear. The same is again the case in the period commencing from the middle of February until the end of April."

In Belgium and Luxembourg it is not uncommon; and Baron De Selys states that it nests in the Ardennes and the woods of Campine. The north of France is visited by a tolerable number on each annual migration; and it also breeds in the mountainous districts and the sea-cliffs. It inhabits Portugal, where it is said to be generally distributed. Professor Barboza du Bocage writes to me as follows:—"It has been stated that in Portugal as well as in the south of Spain the Peregrine is replaced by the Barbary Falcon; but this is not the case, for all the specimens I have hitherto been able to examine are referable to *F. peregrinus*." In Spain it is, Mr. Howard Saunders states, common throughout the country, breeding in every mountain-range; and Colonel Irby writes (Orn. Str. Gibr. p. 50), it is "most abundant in Andalucia in winter; but some few are resident—a pair nesting at Gibraltar, near O'Hara's Tower, and occasionally coming into the town to carry off tame Pigeons. I think this pair belongs to the small race of Peregrine which inhabits the coast of the Mediterranean; but they certainly are not the Barbary Falcon. The usual average-sized Peregrine, however, nests on rocks on both sides of the Straits about the 21st of March, laying from three to five eggs." In the mountains of Savoy it is resident, but not common; and it is generally distributed throughout Italy. In Sicily it is not rare as a resident, and many pass there on migration. In Malta, Mr. C. A. Wright states (Ibis, 1864, p. 47), it "appears in spring and autumn, and occasionally at other seasons. I have a female which was caught in a net on the 26th December, 1860. A young male in my collection was killed on the 23rd October, 1861; and a female was taken alive on the 1st November of the same year. The Peregrine has been known to breed in precipitous rocks on the south coast of Malta and Gozo. For several years a pair nested and brought up their young in an inaccessible cliff near Casal-Zurrico." According to Lord Lilford it is "common in Epirus in winter, where it is of great assistance to the wild-fowl shooter. Occasionally breeds in the island of Corfu, where I observed it near Pelleka in April 1857.

Dr. Krüper speaks of it as being a rare bird in Greece, Macedonia, and Asia Minor, but a resident; for it has been obtained in the winter, and is known to breed there. There are, he adds, only three breeding-places in Greece—two on Parnassus, and one on the Parnes mountains of Attica. In Southern Germany it occurs here and there, and breeds in suitable localities, but is by no means common. Dr. Fritsch states that it breeds in Bohemia. I was informed by the late Mr. E. Seidensacher that at least one pair had their nest in the mountains not far from Cilli, in Styria; and the Ritter von Tschusi-Schmidhofen writes to me that it is met with throughout Austria, but everywhere rather rare than otherwise. It likewise occurs in the countries bordering the Southern Danube, Turkey, and in Southern Russia, in which latter country it is, Professor von Nordmann states, common in the winter, though but rarely seen in the summer season. Eversmann, who speaks of having heard of a very dark race of the Peregrine in Southern Russia, states that it is found only in the hilly districts and not in the steppes. As above stated, it is a rare bird in Asia Minor; and Canon Tristram, referring to its occurrence in Palestine,

writes (Ibis, 1865, p. 257) as follows:—"The Peregrine, nowhere numerous, occurs at all times of the year, in all suitable localities, near the coast and on the western slopes of the watershed of Central Palestine. To the eastward of the crest we never observed it. It extends from the Lebanon to the south of Jordan. During the winter we frequently met with it as far inland as Nazareth; and in the beginning of March I shot a female from a palm-tree in a garden at Jaffa, where it was evidently, from the state of its lower plumage, incubating. The same restriction of the Peregrine to the coast-line I have observed in North Africa; but there it is replaced inland by the *Falco barbarus*." Lord Lilford, who says that he has met with the present species in various parts of Spain, France, Italy, Sardinia, the Ionian Islands, Epirus, and Northern Greece, adds that he once or twice observed Falcons in the Island of Cyprus, which he can attribute to no other than the present species.

In Africa it is generally distributed in the northern portion, and has occurred as a rare straggler in even the extreme southern portion of the continent. Von Heuglin says that it is a common winter visitant in Egypt, and ranges, though sparingly, southward on the Nile to 10° N. lat., and is found in Abyssinia and at Kordofan. It is most numerous on the lagoons of Lower Egypt, where it feeds on the waterfowl which are found there in abundance. Old males are but rarely seen, females and young birds being usually met with. Captain Shelley thinks that it may occasionally remain to breed; for he shot one, on the 6th of May, at Aboo Fayda; and Mr. J. H. Gurney, jun., writes to me that it seems to be commoner in Egypt than the Lanner, but old males are said to be rare. The stomach of the first specimen he shot contained grain as well as flesh, and it had doubtless been devouring a duck, from the stomach of which the grain in all probability came; and he also shot one in the act of carrying off a Peewit. "I shot another," he writes, "which had been making a heavy meal of locusts. Its feeding on locusts may seem strange to some; but it is ordained that almost all birds, except the smallest, should help in keeping down the numbers of this destructive pest, which in times of great visitation (fortunately rare) will come to a district in such appalling clouds as to threaten absolute ruin to the poor fellaheen." In North-west Africa it is recorded by Loche as found breeding in Algeria; and Dr. Taczanowski states that it is to be met with in mountainous places and on the borders of the Sahara, but everywhere rare. Mr. C. F. Tyrwhitt-Drake states that it is common in Tangier and Eastern Morocco, and breeds in the mountains; and Favier also says (*fide* Colonel Irby, *l. c.*) that it is "not uncommon near Tangier, where some remain to breed; the remainder are migratory, going to Europe in February and March and returning in November and December." Both Berthelot and Dr. C. Bolle speak of it as occurring in the Canaries; and the latter states that it is occasionally met with at Fuerteventura; but Mr. Godman never met with it, nor does Vernon Harcourt refer to it as occurring at Madeira. Mr. J. H. Gurney has shown me two examples from South Africa—one from Natal, and one from the Cape colony; and I possess one from the last locality; but in this part of the African continent it is extremely rare, being replaced by *Falco minor*.

In Asia the Peregrine has also a wide range. It was seen in Persia by De Filippi; and Loftus brought a specimen from Southern Persia. Mr. Blanford did not meet with it in that country; but Major St. John states that a good many are caught in the mountains near the coast and sold at Bushire and Bander Abbas to dealers from Arabia, but that Persian falconers

set but little value on this bird. It is found in India, but does not appear to breed there; for Colonel Delmé-Radcliffe writes (Ibis, 1871, p. 363) as follows:—"I think it is beyond doubt that no instance of the breeding of this Falcon has occurred within the limits of British India. My careful inquiries among natives of rank, as well as among professional falconers and bird-catchers, during a recent sojourn of more than three years and a half in Peshawur and its vicinity, lead me to believe that it does not breed even so near India as Surat, Bonair, Cabul in Afghanistan, or in any of the neighbouring hill-countries." Dr. Jerdon says of it (B. of India, i. p. 23), "found throughout the whole continent of India, from the Himalayas to Cape Comorin, during the cold weather only. I have found it near Trinchinopoly, and at Calicut, on the west coast; and I know that many used to be captured at Ramnad, still further south. It is abundant all along the east coast, less so perhaps on the west coast, and inland is found in suitable localities, especially where there are lakes and large rivers, or where hilly tracts occur, up to the Himalayan range." Dr. Severtzoff met with it in Turkestan, where, he says, it occurs during passage, but may possibly remain to breed. It has been observed in Siberia by all the Russian naturalists who have written on the ornithology of that country. Von Schrenck frequently observed it at its nesting-place on the rocky shores of the Lower Schilka, and on the Upper Amoor, as also once, in the autumn of 1856, on the Tarei-nor. Dr. G. Radde says that it is not rare in the Amoor country. On the 8th June he found an eyry at Cape Kada, above Dshäi, in a steep rock, and a month later, when revisiting the same place, he saw the young, which were fledged. Von Middendorff observed it in July on the island of Aehae, near the south coast of the Sea of Ochotsk; and Steller met with it in the Kurile Islands. Mr. Swinhoe states that it is a resident along the whole length of the Chinese coast; it is also found in Japan, whence Messrs. Temminck and Schlegel received it; and it has also been obtained at Hakodadi by Captain Blakiston, and between Nagasaki and Hakodadi by Mr. Whitely's collectors. Père David also states that he has once seen it in Mongolia.

In America it is found throughout the country, from the extreme north down to the Argentine Confederation. I have examined specimens obtained by Dr. Walker at Port Kennedy, in 72° N. lat., which are specifically inseparable from European examples; and I have seen many from various parts of British North America. Mr. Dall says that it is not common in Alaska, but is found from Nulato to Fort Yukon in spring and summer. It was also obtained by Bischoff at Sitka and Kadiak. It occurs all along the west coast; and Mr. G. N. Lawrence (Mem. Bost. Soc. Nat. Hist. ii. p. 300) says that Mr. Xantus observed the present species at different times in the vicinity of Mazatlan. He discovered the eyry of a pair early in April 1862, in a cliff on an island near Mazatlan called Venada, but found it quite inaccessible. In Mr. Salvin's collection there is a specimen from Veragua. On the east coast it is met with down as far as Chili. I did not meet with it when in Texas, but was assured that it sometimes occurred on the coast; and I have examined examples from Panama and Chili. Natterer obtained it at Praia de Cajatuba, near Para, on the Amazon. According to Gundlach it is found in Cuba; Professor Newton obtained it at St. Croix; and Mr. Gurney informs me that he has seen it from Nevis.

One of the most powerful and active, as well as one of the most docile of the Falcons, the present bird was, during the time when falconry was in vogue, the species most commonly used by the votaries of that noble sport—the female Peregrine being exclusively the Falcon, the

male being the Tiercel, in the language of falconry. In a wild state it is very bold, and will attack tolerably large birds; but where waterfowl abound it appears to prey chiefly on Ducks of various sorts, as well as Gulls and other waterfowl; and its eyry is frequently placed in a locality where there is a good prospect of being able to replenish its larder at short notice. So far as I know, it always chooses the easiest flight, and hence will strike and carry off any weakly bird out of a flock or covey, thus acting in a manner as sanitary police; and I fully agree with many writers who urge that the prevalence of the dreaded Grouse-disease has much to do with the ruthless (and what seems to me unnecessary) destruction of the birds of prey, thus permitting weakly or diseased birds to propagate and perpetuate their diseases, whereas, were their numbers kept down by birds of prey, the diseased birds would be destroyed, and the strong healthy ones alone would remain to breed. Our game-preservers appear solely to strive to raise as many birds as possible, and lose sight entirely of the fact that they destroy the balance of nature and thereby defeat their own ends.

Besides, the Peregrine, when in a wild state, preys largely on Stock-Doves, which have of late years so much increased in numbers; and the presence of a few Falcons is in many parts greatly needed to keep them from becoming too numerous; for they are a great pest to the agriculturist. It is true that it destroys not a few Partridges; but it greatly prefers Pigeons if they are to be had, and many zealous game-preservers assure me that the present species is, comparatively speaking, but little to be feared as far as the destruction of game is concerned. Lord Lilford, in some notes lately sent to me, writes as follows:—"Perhaps this is not the place in which to enter a plea for this my favourite bird; he kills Grouse and Partridges, and almost every man's hand is against him; but in England, at all events, the harm done by Peregrine Falcons to game is so small that I cannot resist a chance of trying to influence such of your readers as may be game-preservers in favour of this noble bird. To a gamekeeper a Hawk is a Hawk, and therefore to be murdered; but with his master surely this Falcon, which was formerly the badge of gentility, should have a claim to protection and respect." I fear that it is of but little use to plead for this beautiful and noble bird; for wherever one appears it is almost sure to be shot; but I feel confident that if our game-preservers would take it under their protection they would find themselves by no means the worse off from having done so.

In the days when falconry flourished, the Peregrine appears to have been chiefly flown at the Heron; and the pursuit of this bird appears to have been considered by falconers of the olden time the very acme of sport. I will not here enter into a discussion on falconry; but it may not be out of place to transcribe the following description of the mode of taking Herons from Sir John Sebright's 'Observations on Hawking:'—"The Herons go out in the morning to rivers and ponds, at a very considerable distance, in search of food, and return to the heronry towards the evening. It is at this time that the falconers place themselves in the open country, down wind of the heronry; so that when the Herons are intercepted on their return home they are obliged to fly against the wind to gain their place of retreat. When a Heron passes, a cast of Hawks is let go. The Heron disgorges his food when he finds that he is pursued, and endeavours to keep above the Hawks by rising in the air; the Hawks fly in a spiral direction to get above the Heron; and thus the three birds frequently appear to be flying in different directions. The first Hawk makes his stoop as soon as he gets above the Heron, who evades it by a shift, and thus

gives the second Hawk time to get up and to stoop in his turn. In what is deemed a good flight this is frequently repeated, and the three birds often mount to a great height in the air. When one of the Hawks seizes his prey, the other soon *binds to him*, as it is termed; and, buoyant from the motion of their wings, the three descend together to the ground with but little velocity. The falconer must lose no time in getting hold of the Heron's neck when he is on the ground, to prevent him from injuring the Hawks. It is then, and not when he is in the air, that he will use his beak in his defence. Hawks have, indeed, sometimes, but very rarely, been hurt by striking against the Heron's beak when stooping; but this has been purely by accident, and not (as has been said) by the Heron's presenting his beak to his pursuer as a means of defence. When the Heron flies down wind, he is seldom taken, the Hawks are in great danger of being lost, and, as the flight is in a straight line, it affords but little sport."

Professor Newton (who, besides the above, gives, in the edition of Yarrell's 'British Birds' on which he is now engaged, some interesting details on falconry) remarks that the female Peregrine is usually flown at Herons and Rooks, and the male, or Tiercel, is more frequently flown at Partridges, and sometimes at Magpies.

The Peregrine is extremely bold; and Lord Lilford informs me that he knows few birds that will face it, the only species he has observed to fight it with success being *Nisaëtus fasciatus* and *Corvus corax*. When impelled by hunger, and not unfrequently without even that strong motive power, the Peregrine will visit large cities to prey on the pigeons. I have known it to frequent the spires in the city of Moscow and create great devastation amongst the numerous pigeons which are found in that town; and Sir John Sebright mentions that they used to frequent London in the autumn, and that a pair which frequented the cross of St. Paul's were the dread of pigeon-fanciers.

The nest of the Peregrine is most frequently placed on the ledge of a rock; but it varies the position of the nest somewhat according to circumstances. Thus, in Pomerania and the flat wooded portions of North Germany it appears, as a rule, to nest in a tree; and Mr. C. Farman found the eggs of the present species in what appeared to be an old nest of the Imperial Eagle, in a large tree near Kialdery, in Bulgaria. Mr. Wiese states (J. f. O. 1855, p. 511) that he found the Peregrine breeding in trees in Pomerania. The first eggs he took were in a small scanty nest, not larger than that of the Crow, in a pine tree; the second lot were in an old Osprey's nest, in a pine-grove; and the third lot were deposited in a deserted Kite's nest. Professor Newton remarks that "in one locality, in Lapland, Wolley found that it bred on the ground in a large marsh, and eggs from more than one nest in this situation were obtained by his collectors for several years;" and Von Middendorff states that in Livonia it nests on the moors, on the borders of large ponds, in the moss, usually at the foot of some stunted thickly foliaged bush, but never otherwise than on the ground. Some years ago I obtained four eggs at Ijå, in Northern Finland, which were in a nest placed on a large tussock in the middle of a great morass. The nest of the Peregrine is generally a somewhat loose and poor structure of sticks and twigs; and the eggs, usually four in number, are subject to no little variation. Judging from a series in my collection, the usual (typical) egg seems to be one which, on a dull brick-red ground, is closely spotted or dotted with reddish brown or darker red; but some are blotched and spotted with rich rufous on a warm reddish white or yellowish white ground; one or two

are marked with dull light red on an almost pure white ground; and one is deep uniform brick-red, with two or three almost black blotches. One from Finland has one end white slightly marked with rufous, and the other half of the egg is dull brick-red with rather darker markings. In size they vary from $1\frac{36}{40}$ by $1\frac{24}{40}$ inch to $2\frac{6}{40}$ by $1\frac{28}{40}$ inch.

The Peregrine, like many others of the birds of prey, exhibits great attachment to a place it has once selected for the purpose of nidification. I have known several localities where a pair of Peregrines have for long had their nest: and Professor Newton states (Ootheca Wolleyana, p. 98) that a Peregrine's nest was found at Avasaxa, in Northern Finland, by the French astronomer in 1736; in 1799 it was rediscovered by Skjöldebrand and Acerbi; in 1853 Wolley found it tenanted; and I may add that several years subsequently, when I was at Torneå, I was told by a young Finlander who collected with me, and who had just come from Avasaxa, that the Peregrine still bred there. Like many others of the Raptores, if one of a pair of Peregrines should be destroyed the remaining bird very soon finds another mate. Referring to this circumstance, Mr. J. A. Harvie-Brown, in his notes on the birds of Sutherlandshire, writes as follows:—"With regard to the fact repeatedly taken notice of by ornithologists, that if one of a pair of Peregrines, or other birds of prey, be shot or otherwise destroyed, the remaining bird easily and rapidly finds a second partner, we are inclined to believe that in no case does it do so without first having a severe battle with its nearest neighbour of the same species. In the spring of 1869 we knew of an authentic instance in which the Tiercel procured a second Falcon within two days and a half (it may have been a much shorter time) of that on which he was deprived of the first. About the same time the Falcon of another pair, from an eyrie about five miles distant, went amissing; and we have every reason to believe that it had not been shot or otherwise destroyed, but had supplied the place of the slain Falcon in the above Tiercel's affections. In a country thinly populated by Peregrines it would probably take a longer time to secure a second partner; but where there are, say, from eight to ten eyries not very far removed from one another there is nothing so very remarkable in the rapid advent of a substitute, though of course, in order to obtain another partner, the Peregrine would have to conquer a rival in battle."

There are three forms of Peregrine which, though closely allied to our European Peregrine, have generally been considered specifically distinct. The first of these, *Falco melanogenys*, Gould (P. Z. S. 1837, p. 139), which inhabits Australia, and is said to extend as far north as Java, very closely resembles *F. peregrinus*; and I am doubtful as to whether it is really specifically distinct. An adult bird in Messrs. Salvin and Godman's collection, from Brisbane, differs merely in having the abdomen tinged with rusty red, and in no other respect, from European-killed examples of the Peregrine. The second, *Falco peregrinator*, Sundevall (Physiogr. Tidskr. 1837, p. 177), which inhabits India, is, judging from the materials I have at hand, so closely allied to the third, *F. cassini*, Sharpe (Ann. Nat. Hist. [4] xi. p. 221) (*F. nigriceps*, Cassin, partim), that I am quite unable to discover any true character by which they may be distinguished; but both these appear to be fairly distinct from *F. peregrinus*. They are very much blacker above, and have the sides of the head much darker than in *F. peregrinus*, the entire side of the head being blackish; and the underparts are rich deep ferruginous closely barred with black. Unfortunately I have not a fully adult specimen of *Falco peregrinator*; but the one I have before me

agrees very closely with specimens in the same stage of plumage of *F. cassini* from South America. This last bird inhabits Chili and the Falkland Islands. *Falco minor*, Bp., is also closely allied to *F. peregrinus*, but is much smaller in size. Full particulars of this species will be given in the present work, as it has been met with in the Western Palæarctic Region.

The specimens figured are the adult and young birds above described, both of which are in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, juv. Crieff, Perthshire (*F. Norgate*). *b, ♂ ad.* Greenland (*A. Benzon*). *c, ♂ ad.* Near Archangel, July 14th, 1874 (*Piottuch*). *d, ♂ juv.* Volga, May (*H. F. Möschler*). *e, ♂ ad.* Near Stettin, 1860 (*H. E. D.*). *f, ♂ juv.* Malta, October 1861 (*C. A. Wright*). *g, ♀ ad.* Olympus, Macedonia, December 4th, 1869 (*Dr. Krüper*). *h, juv.* Albania (*Hanbury Barclay*). *i, juv.* Near Capetown, South Africa (*E. L. Layard*). *j, ♂ ad.* Point Lepreaux, New Brunswick, 1864 (*A. R. Dresser*).

E Mus. Norv.

a, ♂ ad. Thetford Warren, Norfolk. *b, ♀ ad.* Aylsham, Norfolk (*W. Cook*). *c, juv.* Northrepps, Norfolk (*J. H. G.*). *d, e, f.* Greenland (*Holböll*). *g, ♀ ad.* Motka Uoma, Lapland (*J. Wolley*). *h.* France (*Parzudaki*). *i, ♀ ad.* Bagnières de Bigorre, France (*Philippe*). *j, ♂ juv.* Tangier (*Favier*). *k, ♀ ad.* Province of Constantine, Algeria (*H. B. Tristram*). *l, ♀.* Smyrna (*Guido von Gonzenbach*). *m.* Beyrout (*Mr. Laurella*). *n, ♀.* Sakkara, Egypt (*Parzudaki*). *o, juv.* White Nile (*Parzudaki*). *p, ♀.* Natal. *q, ♀ ad.* Cape of Good Hope (*Verreaux*). *r.* Tiflis, Caucasus (*A. B. Brooke*). *s, t, juv.* India (*J. Gould*). *u, v.* India (*Mr. Warwick*). *w, ad.* Ceylon (*Parzudaki*). *x, ad.* Borneo (*J. Dillwyn*). *y, ♀ ad.* Manilla (*J. Gould*). *z.* Sandalwood Island (*Cumming*). *aa, ♂ ad.* N.W. Formosa (*R. Swinhoe*). *ab, ♂ ad.* Hakodadi, Japan (*Captain Blakiston*). *ac.* Fort Kennedy, 72° N. lat., 94° W. long. (*Dr. D. Walker, Naturalist to the 'Fox'*). *ad, ae, ♀ jun.* Fort Churchill, Hudson's Bay (*Capt. Herd*). *af, ad.* Saskatchewan river (*Leadbeater*). *ag, ah, jun.* Canada (*Mr. Stevens*). *ai.* Canada (*Mr. Hadcraft*). *ak, jun.* Hudson's Bay (*J. Gould*). *al, ♀ jun.* Great Egg Harbour, New Jersey (*J. Cassin*). *am, ad.* New York (*J. W. Backhouse*). *an, ao, jun.* Island of St. Croix, West Indies (*A. Newton*). *ap, jun.* California (*Verreaux*). *aq, jun.* Mexico. *ar, jun.* Colon, Panama (*Mr. Ripon*). *as, ♂, at, ♀ jun.* Chili (*Dr. Lambeck*). *au, jun.* Santiago, Chili (*Boucard*).

E Mus. Salvin and Godman.

a, b. Fort Rupert, British Columbia (*P. N. Compton*). *c, ♀.* Dueñas, Guatemala (*O. Salvin*). *d, ♂.* Veraguas (*Arcé*). *e, ♂.* Mendoza, February 1871 (*Weisshaupt*).

E Mus. Howard Saunders.

a, ♂ ad. Near Seville, Spain, April 15th, 1869. *b, ♂ ad.* Seville, August. *c, ♂ juv.* Near Malaga, October 9th, 1872. *d, ♂ juv.* Krain, Hungary.



J.G.Keulemans lith.

M&N Hanhart imp

LESSER PEREGRINE.

FALCO MINOR.

FALCO MINOR.

(LESSER PEREGRINE.)

Falco peregrinoides, Smith, S.-Afr. Q. Journ. i. p. 235 (1830, nec Temm.).
Falco minor, Bp. Consp. Gen. Av. i. p. 23. no. 5 (1850).
Falco communis, var. *minor*, Sundev. Krit. om Levaill. p. 26 (1857), fide Sharpe, Cat. Accip. p. 383.
Falco peregrinus, var. *capensis*, Grill, Zool. Anteckn. p. 48 (1858), fide Sharpe, ut suprà.
Falco communis minor, Schl. Cat. Mus. P.-B. *Falc.* p. 4 (1862).
Falco barbarus, Blanf. Geol. & Zool. Abyss. p. 288 (1870, nec Linn.).

Figura unica.

Sharpe, Cat. Accip. Brit. Mus. pl. 12.

Ad. F. peregrino similis sed valdè minor, corpore subtùs rufescente cervino lavato et fasciis angustioribus et inter se propioribus quam in *F. peregrino* notato.

Juv. F. peregrino similis, sed minor.

Adult Male (Smyrna). Resembles *Falco peregrinus*, but is much smaller; throat and breast white with a warm reddish buff tinge, the latter marked with drop-shaped black spots; rest of the underparts greyish with a pale warm rufous tinge, very closely barred with black. Total length about 13 inches, culmen 1·05, wing 11·4, tail 5·5, tarsus 1·8, middle toe with claw 2·25.

Young (Tangier). Resembles the young of *Falco peregrinus*, but is smaller, the upper parts are paler, and the striations on the underparts are somewhat narrower and more profuse.

Obs. Specimens from South Africa have the underparts rather more rufous than those from other localities in the series I have examined. Mr. Sharpe (Cat. Accip. p. 384) gives the length of the wing of the young bird from South Africa as 9·1 inches; but the adult one in skin (spec. *b*) from that locality is the largest I have examined, having the wing 12·3 inches long, that of the female from Abyssinia being rather less.

Specimens from Morocco and Tangier vary in size as follows—wing 11·0–11·2, tail 5·4–5·6, tarsus 1·75–1·8, middle toe with claw 2·2–2·3. None of these have the sex indicated on the labels, except one, a female, which measures—wing 11·1, tail 5·65, tarsus 1·75, middle toe with claw 2·25; and a female from Rhodes measures—wing 11·0, tail 5·6, tarsus 1·75, middle toe with claw 2·3. Thus it will be seen that, if the sex is correctly determined, the male from Smyrna, which I have described, is the largest bird of those from northern localities; but it would in any case appear that the sexes differ but slightly in size. One difference between the present species and the Peregrine, which is somewhat striking, is the length and slenderness of the legs and feet in the present species compared with those of *Falco peregrinus*.

This small representative of our Peregrine inhabits Africa and occasionally wanders into Asia Minor and Europe proper. Its headquarters appear to be Southern and North-western Africa;

and in the former locality it seems to take the place of the common Peregrine Falcon. Mr. Layard says (B. of S. Afr. p. 19) that it "seems to have a pretty general range over the colony, several specimens having reached me from different localities. I have likewise seen it on the wing several times near Capetown, and purchased one in the flesh, which was being carried through the town by a shooter. Mr. Atmore writes from Swellendam, 'it is not rare about here, but very difficult to get, except in the breeding-time, when they come after the poultry.'" On the west side of the continent I find it recorded from Damara Land by Mr. Andersson, who states (B. of Damara Land, p. 12) that he never observed but one individual, a young female, which he obtained at Objinere, about two days' journey from Objimbinque; and Mr. Gurney adds that in Mr. Andersson's last collection there was an adult male of this species, obtained at Ondonga on the 30th January, 1867. Between here and Mogador I do not find it recorded, except that a specimen, in immature plumage, from the river Gambia, now in the British Museum, catalogued by Mr. Sharpe as *Falco barbarus*, in my opinion decidedly belongs to the present species; but it is, so far as I can ascertain, almost impossible to distinguish *Falco barbarus* and *Falco minor* in immature dress. I possess two, and have examined several more, examples of this Falcon from Tangier, all collected by M. Olcese. When I first obtained an immature bird from there I believed it to be *Falco barbarus*; and Colonel Irby, partly misled by me, included *F. barbarus* in his 'Ornithology of the Straits of Gibraltar' as occurring near Tangier. Mr. J. H. Gurney informs me that it is found at Mogador, and he was inclined to regard specimens from there and from Tangier as belonging to a dark-headed form of *Falco barbarus* lacking the rufous nape; but a critical examination of four examples from Tangier (two adult and two immature), with specimens from other localities, clearly demonstrates that they are referable to the present species. *Falco minor* may possibly occur in several of the countries bordering the north side of the Mediterranean; for it has been obtained near Milan, whence M. Jules Vian obtained a specimen shot late in the month of April.

I possess an example from Rhodes which is just assuming the mature dress; and there is one in the Norwich Museum, from near Smyrna, in very full plumage. The various authors who have written on the ornithology of North-east Africa do not record it: but it certainly occurs there; for a specimen obtained in Abyssinia by Mr. Blanford is in the British Museum. On the east side of Africa it has been obtained on the Zambesi and the Joanna Islands, whence specimens are in the Norwich Museum, as also from Natal, where it was procured by Mr. Ayres.

Respecting the habits of the Lesser Peregrine I find nothing of any importance on record; but it appears to assimilate tolerably closely to its larger ally, *Falco peregrinus*, and doubtless its breeding-habits and eggs are similar to those of that species; but the eggs will doubtless run smaller. Colonel Irby obtained the eggs with one of the specimens I have examined; but I have not had an opportunity of examining them.

The specimens figured are the adult male and young bird above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.*, *b*, *juv.* Tangier (*Olcese*). *c*, ♀. Trianda, Rhodes, December 1st, 1874 (*C. G. Danford*).

E Mus. Lord Lilford.

a, ♀ (not quite adult, with eggs). Tangier, April 1st, 1874 (*Col. Irby*).

E Mus. Norv.

a, ♂ *ad.* Smyrna (*G. von Gonzenbach*). *b*, ♂. Cape of Good Hope (*Verreaux*). *c*, *ad.*, *d*, *juv.* Natal (*Ayres*). *e*, *ad.* Zambesi (*Dr. Dickerson*). *f*, *juv.* Joanna Islands, Africa (*Dr. Dickerson*).

E Mus. Brit. Reg.

a, *ad.* South Africa (*J. Rocke*). *b*, *juv.* South Africa (*Verreaux*). *c*, ♀ *ad.* Waliko, Anseba valley, Abyssinia, July 21st, 1868 (*W. T. Blanford*). *d*, *juv.* River Gambia (*Rev. D. F. Morgan*). *e*, *ad.* Morocco (*Boucard*).



J.G. Keulemans del.

M&N Hanhart imp

BARBARY FALCON.

FALCO BARBARUS

FALCO BARBARUS.

(BARBARY FALCON.)

The Barberry Falcon, Albin, Nat. Hist. Birds, Suppl. iii. p. 2, pl. 2 (1740).
Accipiter falco tunetanus, Briss. Orn. i. p. 343 (1760).
Falco barbarus, Linn. Syst. Nat. i. p. 125 (1766).
Falco pelegrinoides, Temm. Pl. Col. 479 (1838).
Falco peregrinoides, Schl. & Susemihl, Vög. Eur. taf. 9. fig. 1 (1839).
Falco lanarius alphanet, Schl. Abh. in der Geb. Zool. p. 16 (1841).
Falco punicus, Levaill. jun. Expl. Scient. de l'Alg. pl. 1 (1850).
Gennaja barbarus (L.), Bp. Rev. et Mag. de Zool. 1854, p. 535.
Gennaja barbara (L.), Loche, Hist. Nat. Ois. d'Alg. p. 55 (1867).

Bourni, Arabic.

Figuræ notabiles.

Temminck, Pl. Col. 479; Fritsch, Vög. Eur. taf. 2. fig. 3; Susemihl, Vög. Eur. taf. 9. fig. 1; Salvin, Ibis, 1859, pl. 6; Salv. & Brod. Falconry Brit. Isl. pls. 20, 21.

♀ *ad.* suprà ut in *Falcone peregrino* colorata sed pallidior, nuchâ saturatè ferrugineâ nigro schistaceo notatâ: corpore subtùs albido, rufescente cervino tincto: hypochondriis et abdomine imo vix nigro fasciatis: subalaribus rufescenti-albidis nigricante fasciatis.

Juv. vix a *F. minore* distinguenda.

Adult Female (Constantine, Algeria). Entire upper parts as in the adult Peregrine, but paler and greyer, the head especially being lighter-coloured; entire nape deep rusty red blotched with slaty black; underparts creamy white with a rufous tinge; breast and throat unmarked; flanks and the lower abdomen faintly barred with blackish; under wing-coverts warm reddish white closely barred with blackish; bill, cere, iris, and legs as in the Peregrine. Total length about 13 inches, culmen 0·9, wing 11·0, tail 5·5, tarsus 1·7, middle toe with claw 2·0.

Young. Resembles the young of *Falco minor*.

The Barbary Falcon inhabits Northern Africa, its head quarters being the Atlas range; and it has been met with as far east as India. It doubtless straggles now and again to the northern shores of the Mediterranean; and I have examined a specimen from Granada, now in the British Museum, which certainly appears to me to be referable to the present species. Owing, however, to the close resemblance between the young of the present species and the Lesser Peregrine, it is necessary to exercise extreme caution in accepting the records of its occurrence in the south of Europe. Messrs. Degland and Gerbe merely state that it is occasionally seen in the south of Europe, without giving any specific instance of its occurrence. I find no evidence of its occur-

rence in Northern or Central Europe, except that M. Jules Vian says (Rev. et Mag. de Zool. 1867, p. 176) that he has examined a specimen obtained in the Netherlands in 1857, and now in the Leiden Museum. Mr. A. B. Brooke states (Ibis, 1873, p. 151) that he obtained a pair in immature dress on the island of Vacca, in the Mediterranean; but it appears to me quite possible the species obtained by him was the Lesser Peregrine; and the bird recorded (Ibis, 1859, p. 159) as shot in Malta by Colonel Drummond-Hay was doubtless this latter species. In Tangier and Morocco the present species appears to be replaced, or nearly so, by *Falco minor*; but, according to Mr. R. B. Sharpe, it has occurred on the Cape-Verd Islands; for he writes (Ibis, 1875, p. 254) as follows:—"I examined an adult specimen of this Falcon, shot by M. A. Bouvier during his expedition to the Cape-Verd Islands. He killed it in a lonely gorge in the mountains. A flock of St. Jago Sparrows (*Passer jagoensis*) came suddenly in sight, the Falcon following in quick pursuit." It appears to be tolerably common in Algeria, and was first described from Barbary. Mr. Taczanowski speaks of it as being the commonest Falcon in Algeria, both in the mountains and in the desert. Loche states that it is the favourite Falcon of the Arab sportsmen; and Canon Tristram, who shot one in December near the Mzab country, says that, besides the trained birds, he occasionally saw it wild on rocky precipices. Mr. O. Salvin writes (Ibis, 1859, p. 187) respecting the occurrence of the present species in the Atlas range as follows:—"My own experience of this bird was entirely confined to the Eastern Atlas, where in some districts it is by no means uncommon. I had many opportunities of watching the birds, and was present at the siege of three of their eyries, besides discovering others which were inaccessible. The first of these nests was in a hole in the eastern portion of the rock of Djebel Dekma. To this nest for a long time Mahomed obstinately refused to ascend; it was his first experience in rope-climbing. Two dollars, however, produced the desired effect; and after five hours' hard work, during which we had to employ every available foot of cord, even to our tent-lines, we were rewarded with three eggs. While the siege was going on, I shot one of the old birds. A few feet from the nest of the Lämmergeyer in Kaifan Msakta was another nest. From this we took on the 9th of April four eggs just ready to hatch. The parent birds I watched for some time as they flew anxiously round, but did not shoot one. On the 20th of April an Arab reported that he had found a nest of '*Bournee*' in Kef Boudjalo, a rock situated no great distance from Kef Laks. I immediately started to the spot, taking with me Mohamed, my gun, and ropes. A successful siege was the result; and I returned to the tents with three eggs and one of the parent birds. . . . . The Barbary Falcon brought to England by us (mentioned above as now in Mr. Gurney's possession) was procured from a rock near the Marabout of Sidi Khalifa Cherif, on the northern boundary of the extensive plain that holds the salt lake of Guerah el Tharf. Bil Ghazoum, our interpreter, and Mohamed, our climber, took it and another from the same nest, about the 8th of May. They had then almost assumed their feathers. Between these two birds there subsisted a marked difference in size; and the smaller of the two had, in addition to the rufous marking at the back of the neck, a light-coloured reddish head. We kept them about two months, during which time they came to their full feather, the same inequality in size subsisting between the two. They were doubtless male and female. Unfortunately the male died during the journey between Marseilles and Paris, and we had no means at hand for preserving it. The female is now at Catton."

In Egypt the Barbary Falcon appears to be rare. A specimen from Sakkara is in the Norwich Museum; and Mr. E. C. Taylor says that he saw one at Cairo in January 1864, in the possession of a gentleman who had shot it the day before near Sakkara; but he never met with it on any other occasion. Captain Shelley writes (B. of Egypt, p. 187) that, though a resident, it is rather rare in Egypt and Nubia. At Edfoo he saw a pair on the 21st of April which he believes to have belonged to this species; and on the following day he shot a handsome male specimen on a sandbank near El Kab.

To the eastward the present species ranges as far as India; for two specimens have undoubtedly occurred there. Mr. A. O. Hume, who gives (Stray Feathers, i. p. 21) a most careful description and measurements of these two birds, says, "The male was procured early in 1872 by Dr. Stoliczka, in Cutch; the female was shot by F. R. Blewitt, Esq., in the Nursingpoor district (Central Provinces) on the 16th December, 1869." Mr. J. Scully, who obtained three specimens in Turkestan, says (Stray Feathers, iv. p. 118) that "it is said to inhabit the hills of Kiziltagh and Kugiar, and to breed there in summer. It visits the plains of Kashgharia about the beginning of winter, but not in great numbers. It is said to prey chiefly on Pigeons (*Columba rupicola*) and 'Beghitak' (*Pterocles arenarius*)."

Respecting the habits of the present species I find nothing of importance on record beyond the information given by Mr. O. Salvin, which I have quoted above. It is very highly esteemed by falconers; and Messrs. Salvin and Brodrick speak of it as the "beau idéal" of what a Falcon should be, and a perfect model of strength and speed combined; for, although smaller by nearly a fourth than the Peregrine, it has the organs of destruction, such as the beak, feet, and talons, fully as large, united to longer and more pointed wings in proportion to its total length, in this respect almost rivalling the Hobby. Eggs of the Barbary Falcon in the collection of Mr. O. Salvin and in my own collection resemble those of the Peregrine, but are rather smaller in size.

The specimen figured is the adult female above described, and belongs to the Norwich Museum; and I take this opportunity of tendering my sincere thanks for the prompt manner in which it was placed at my disposal, together with the other specimens in that rich collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. Brit. Reg.

a, ♂. Nubia. *b*, ♀. Sierra Alfacar, Granada, Spain, January 1871 (*H. Saunders*).

E Mus. Norv.

a, *b*, ♀ *ad.* Province of Constantine, Algeria (*O. Salvin*). *c*, ♂. Sakkara, Egypt (*Parzudaki*).

E Mus. G. E. Shelley.

a, ♂. El Kab, N.E. Africa, April 22nd (*G. E. S.*).



Hanhart imp

LANNER.

FALCO FELDEGGII

FALCO FELDEGGI.

(LANNER.)

Falco feldeggii, Schl. Abh. Geb. Zool. iii. p. 3, taf. 10, 11 (1841).
Falco peregrinoides, Schlegel, in Susemihl's Vög. Eur. 2nd ed. p. 39 (1841, partim).
Falco lanarius, Schl. Rev. Crit. p. 2 (1844, nec Linn.).
Falco rubens, Thien. Rhea, i. p. 72 (1846).
Le Lanier hagard, Schl. & Verst. Traité Fauc. pl. 10 (1853).
Gennaia lanarius, Bp. Rev. et Mag. de Zool. 1854, p. 536.
Falco biarmicus, Taylor, Ibis, 1859, p. 44 (nec Temm.).
Falco tanypterus, König-Warth. Ibis, 1860, p. 122 (nec Schl.).
Falco lanarius græcus, Schl. Mus. Pays-Bas, *Falcones*, p. 15 (1862).
Falco peregrinoides, Fritsch, Vög. Eur. tab. 2. figs. 1, 2 (1871, nec Smith).

Figuræ notabiles.

Schlegel, *l. c.*; Fritsch, Vög. Eur. taf. 2. fig. 2, taf. 5. figs. 1, 2; Salvin & Brod. Falc. Brit. Isl. pls. 18, 19; Schlegel & Susemihl, Vög. Eur. pl. 8 A, ? pl. 9. fig. 1.

Ad. fronte albidâ: pileo et nuchâ pallidè rufescentibus nigro-fusco striolatis, nuchâ imâ eodem colore notatâ: capitis lateribus et gulâ albis: striâ malari inconspicuâ, regione circumoculari et striâ per oculos ad nucham productâ nigro-fuscis: dorso et tectricibus alarum sordidè schistaceo-fuscis cervino-cinereo fasciatis et terminatis, uropygio et supracaudalibus magis cinereo-schistaceis cæruleo-cinereo transfasciatis: rectricibus pallidè cinereo-fuscis cinereo et cervino-cinereo fasciatis et albido apicatis: pectore et corpore subtùs albis cervino tinctis et nigro-fusco guttatis: rostro corneo, cerâ et pedibus flavis: iride fuscâ.

Juv. pileo pallidiore et magis nigro-fusco notato striatoque: corpore suprà sordidè fusco, plumis haud fasciatis sed pallidiore marginatis: caudâ sordidè cinereo-fuscâ, albido terminatâ, rectricibus centralibus haud fasciatis, sed lateralibus cervino-albido guttatis: gulâ et gutture albis: corpore reliquo subtùs albo conspicuè fusco striato.

Adult Female (Egypt). Forehead dull white; crown and nape pale creamy rufous finely striated with blackish, the lower nape blotched with brown; region round the eye and an irregular stripe from behind the eye to the nape deep brown; moustache small and narrow; fore part of the back and wing-coverts dull slaty brown barred and tipped with buffy ash-grey, on the lower back and upper tail-coverts becoming slaty ash barred with ashy blue; quills blackish, with an ashy tinge on the outer webs, and on the inner webs barred with white; tail dull brown with an ashy tinge, closely banded with ashy grey tinged with buff, and tipped with buffy white; chin and upper throat white; rest of the underparts white with a buffy tinge, marked with drop-shaped blackish-brown spots, these being much elongated on the breast; under wing-coverts barred and spotted with blackish brown; bill pale horn at the base, deep horn at the tip; cere and legs yellow; iris brown. Total length about 18 inches, culmen 1·25, wing 13·3, tail 7·2, tarsus 2·2.

Young Male (Tangier). Crown much paler and more marked with blackish brown than in the adult; upper parts generally dull dark sandy brown, the feathers with lighter margins but without any transverse bands, except on one or two new feathers on the rump; central tail-feathers unbarred, and the lateral ones with only imperfect buffy bands; chin and throat white; the moustache rather broader than in the adult; rest of the underparts white broadly striped with dark dull brown; legs dull lead-colour with a yellowish tinge. Wing 11·6, tail 6·8, tarsus 2·0.

This Falcon inhabits North Africa, and is only of somewhat rare occurrence in Southern Europe. In Asia it is replaced by *Falco babylonicus*, not appearing to range further east than Asia Minor. It does not seem to have been met with in North Germany, Holland, or France. Schlegel certainly states that there is a specimen in the Mayence Museum, obtained in Germany; but, according to Borggreve (J. f. O. 1872, p. 333), the specimen in question is nothing but a young Peregrine. It is found in Spain, and breeds there. Colonel Irby states (Orn. Str. Gibr. p. 51) that it has been found nesting near Seville; and I am indebted to Lord Lilford for the following notes respecting its occurrence in Southern Europe:—"I know but very little of this Falcon in a wild state, having only met with it once in Andalucia, whence I have since received skins, eggs, and young birds alive—and again in the island of Standia, off the north coast of Crete, where a pair were evidently breeding in April 1875. From the accounts of all modern observers the Lanner is a rock-breeding species; but the old falconry books speak of it as breeding commonly on trees in the south of France; and in Andalucia the eggs above mentioned were laid in old nests of other raptorial birds, in fir trees. I received the skin of an old female, and two eggs, from a nest off which Lieut.-Colonel Irby had shot a common Buzzard in a previous year; this was not far from the Palacio del Rey, on Lomo del Grullo, in the Coto del Rey. We could not discover the exact site of the nest in the island of Standia above mentioned; but it was on the south side of the island, to the eastward of the easternmost bay or harbour. I had one long and ineffectual shot at one of the old birds as it was in pursuit of a Rock-Dove; but we observed them constantly during our three days' stay at this most barren and rocky of islets, and saw them fiercely attack and drive off a Harrier and a Serpent-Eagle. I have received many Lanners alive from Mogador, and noticed a very great variety of plumage amongst them, some of the young birds being of a general colouring much darker than that of an average Peregrine of the same age, with very deep-rufous markings on the nape, whilst others were of a light-rusty plumage, resembling that of *F. sacer*, with the nape-markings of a pale buff colour: these Mogador birds also varied greatly in size. I have found the Lanner in captivity very docile and tamable, but delicate of constitution, and requiring great care; and I do not think highly of their courage or value from a falconer's point of view, though there is no doubt that the old falconers took many birds, especially young wildfowl, by means of this species."

So far as I can ascertain, the present species is not met with in Southern France, unless perhaps as an occasional straggler; and it is of extremely rare occurrence in Italy. Count Salvadori states that a female in his collection was obtained in the market of Rome in the winter of 1852–53, this being, he adds, the only specimen he knows of as having been killed in Italy. MM. Jaubert and Barthélemy-Lapommeraye cite Malta as a locality where this Falcon is to be met with, but give no authority; and Mr. C. A. Wright never met with it there.

It is not included by Dr. Krüper in his list of the birds of Greece; but it is not improbable

that he may have confused it with the Saker under the name of *Falco laniarius*. It certainly occurs in Dalmatia; for the examples on which its name *feldeggi* was based were obtained there by Feldegg, and there is a specimen in the Vienna Museum from the same locality. Mr. Farman, who met with it in Bulgaria, writes (Ibis, 1868, p. 411):—"Out here the Lanner appears to be even less common than the Saker; but whereas the Saker seems to affect the wild wastes of down and moorland, the Lanner is more equitably distributed, and is occasionally to be seen in all parts of the country. I have seen it near the lower lake of Devna, in the Pravidy valley, and in the neighbourhood of Shitangick—three localities as dissimilar as possible. In April 1866 a pair bred among the rocks in the Pravidy valley; the nest contained four eggs, which my friend Mr. Bohenskil secured for me. They much resemble those of the Peregrine Falcon, but are larger and more pointed at the small end than any Peregrine's egg in my possession; the ground-colour is light brown; and they are marked all over with very small spots of a light reddish colour; in some parts the spots are so close together that they entirely hide the ground. There is little or no difference between the marking of the large and small end."

Messrs. Elwes and Buckley say (Ibis, 1870, p. 74):—"We cannot be quite positive as to the occurrence of the Lanner in Macedonia, as we could not obtain a specimen; but we shot several times at Falcons which, we believe, were of this species. We were equally unsuccessful in Bulgaria, though we found two or three pairs of Falcons, which no doubt were Lanners, about the same rocks where Mr. Farman had previously found them. One nest of four eggs was got in a range of rocks above the Schumla-road station; and the birds, which we saw distinctly, screamed in a manner quite different from the Peregrine Falcon, and were certainly not Sakers."

I find but scant information respecting the occurrence of the present species in Asia Minor; but, as above stated, Lord Lilford met with it on the island of Standia, off Crete, and Canon Tristram writes (Ibis, 1865, p. 257) that it is "by far the most common of the large Falcons, and universally distributed throughout the rocky wadys on both sides of the Jordan and the Dead Sea, and as far north as the foot of Hermon. It is a permanent resident, and, as we were told, reoccupies the same eyrie year after year. A nest of four eggs was taken in the gorge of the Wady Kelt, near Jericho, on February 29th; and the Lanner was breeding in four or five places in the Wady Hamam and Wady Leimun, near Gennesaret, in April. No region is too desolate or dreary for this noble bird. On the stupendous rock of Masada, facing the Dead Sea, a Lanner dropped a Pochard Duck on being fired at; and we also saw a pair at Jebel Usdum, the salt mountain at the south end of the lake. It seems to avoid the forests; for though very common near the mouths of the ravines east of Jordan, we never observed it in the vast forests of Gilead and Ajlun. It is in high repute among the Bedouins for the chase; and trained birds are as valuable as in North Africa. But though we frequently saw it in the possession of Arab sheiks of high degree, we never had an opportunity of witnessing the sport, as we only met them on the march."

In North-east Africa, Mr. E. C. Taylor informs me, the Lanner is the most abundant of the large Falcons, and is a resident. In January 1864 he shot three within a short walk of Cairo. Captain Shelley, who confirms this statement, writes (B. of Egypt, p. 188):—"Like all the

true Falcons, it appears very partial to the neighbourhood of water; frequently it will follow the sportsman on the look-out for wounded game. On the 19th of April I shot a female specimen in an interesting stage of plumage, from which my description of the immature bird is taken." According to Von Heuglin "it is more frequently met with in the winter than in the summer. It frequents groves, such as palm-groves, bare rocky mountains, pyramids, and old temples; and in the autumn, when the large flocks of Ducks and Waders arrive, it is seen on the lagoons, canals, and overflown meadows. It lives singly and in pairs, nesting on cliffs and inaccessible ruins in March and April."

In North-west Africa this Falcon appears to be tolerably common. Canon Tristram met with it in Algeria, where, Loche remarks, it is rather more numerous in the southern districts than on the coast; and Colonel Irby says (Orn. Str. Gibr. p. 51), "according to Favier this species, which the Moors confound with the Peregrine, is resident, and as common as that species around Tangier. On the 1st of May 1872, I obtained a female Lanner and three eggs. The nest was on the rocks near the above town. Two of the eggs were slightly sat on; the third, much lighter in colour, was addled, which is often the case with eggs faintly marked or differing from the usual colouring." It appears to be common at Mogador, where, judging from Lord Lilford's description, *Falco tanypterus*, Licht., also is probably to be met with. This species, which is generally considered distinct, differs from *Falco feldeggi* merely in having the upper parts darker and more uniformly coloured, the nape rather more rufous; and it is also smaller in size, and has the scutellæ on the tarsi larger.

In South Africa, however, there is a perfectly distinct species of Lanner, *Falco biarmicus*, Temm., which differs in having the crown and nape more intensely rufous, and the underparts almost unspotted in the adult, and of a rich vinous red colour.

In Western Asia the Lanner is replaced by *Falco babylonicus*, a species with which I am but little acquainted, and which appears to differ but slightly from the true Lanner. It is well figured in 'The Ibis' (1861, plate vii.) from a specimen obtained by Colonel Irby in Oudh; and this gentleman gives (Ibis, 1861, p. 218) the following notes communicated to him by Dr. Sclater, viz.:—"Captain Irby's specimen seems to be referable to a new species or a distinct variety of true Falcon, most nearly allied to *Falco barbarus* (cf. 'The Ibis,' 1859, p. 184, pl. 6; *Falco peregrinoides* of Temminck), for which Mr. Gurney proposes to use the name *Falco babylonicus*, the first specimen of it having been obtained in Babylonia by the Euphrates Exploring Expedition.

"The coloration of *F. babylonicus* is nearly similar to that of *F. barbarus*, but generally lighter, and rather more rufous on the front of the head: the size, however, is nearly one third greater, being the same as that of *F. lanarius* of Schlegel. From the latter bird it may be distinguished—(1) by the absence of the whitish frontal band, the rufous of the vertex extending forwards onto the cere, and being bordered behind by a broad band of dark slaty brown, which divides it from the rufous of the nape; (2) by the feathers on the back of the neck below the nape being bordered with rufous of the same tinge as on the nape; this edging is sometimes present in *F. barbarus*, but never to the same extent in *F. lanarius*; (3) by the comparative absence of spots on the upper portion of the lower surface, in which character it nearly agrees with the Abyssinian form of *F. lanarius*, which I take to be strictly Lichtenstein's *F. tanypterus*. The middle claw of *F. babylonicus* is longer than that of *F.*

lanarius, in which respect it also approaches to the structure of *F. barbarus*. Judging from the partial remains of the immature plumage in one specimen, it would appear that in this stage the bird most nearly resembles *F. peregrinus*, in which particular it also agrees with *F. barbarus*."

In habits this Falcon does not differ greatly from its allies, but it is not so bold or powerful a bird as the Peregrine, and is held in less estimation by most falconers. It is, to a large extent, a rock-frequenting species, but is also found in groves; and during the season when the wild fowl migrate southward it frequents lagoons and localities where these birds are met with.

Amongst the Arabs, however, the Lanner appears to be valued higher than amongst European falconers; for Canon Tristram states that they are, when trained, valued at from £40 to £60. This gentlemen, in his Notes on the Ornithology of Northern Africa (Ibis, 1859, p. 284), writes as follows, viz.:—"As far as I could discover, the Lanner breeds about the Atlas range, chiefly, if not exclusively, on its southern side, while the Saker is a more truly desert inhabitant.

"The Arab Sheiks pursue the sport of falconry with all the zeal, skill, and science of the 'noble mysterie' of our ancestors. The villein who presumed to raise his hand against the king's deer was not more certain of condign punishment from the Norman, than the plebeian Sehaur who should dare to cast a Hawk in the Sahara. No Agha or Sheik of high degree ever moves for war, business, or pleasure unattended by his falconers, who are his confidential lieutenants. The care of three Falcons is considered sufficient employment for one falconer with an assistant; and on the march, one or two of these important personages follow mounted immediately behind the Sheik, with a hooded Falcon on the wrist and one perched on each shoulder. The Houbara Bustard is the favourite quarry; but Eagles, Kites, Sand-grouse, and (in the case of the Sakkr Falcon) the gazelle afford equal sport to the huntsman. When a Bustard is descried, the whole cavalcade instantly halt, the Hawk on the wrist is transferred to the hand of his master, who, attended by his falconers alone, instantly sets off, and, unhooding his bird, *throws* him from his wrist towards the Bustard. Much skill is exercised in drawing the attention of the Falcon to the Bustard before it rises. Should it unfortunately take wing before its pursuer has poised herself above it, an ill-trained or impetuous bird is very apt to strike it in the air. This, according to the view of your Desert connoisseur, is a most unpardonable and unsportsman-like offence, to be punished with death. A skilful Hawk will at once rise to a considerable height, then, swooping down, make feints until the Bustard takes to its legs instead of its wings. The Falcon then poises herself over it while a second is flung off the wrist, and the two together give chase, the speed of the Houbara being such that a fleet Arab can scarcely keep up with the pursuit. The poor bird runs along, aiding its speed by a perpetual fanning with its wings, its head stretched forward like a Corncrake's, and its conspicuous black and white ruff folded close back over its neck—a pitiable contrast to the proud fellow who was lately strutting with head erect, elevated crest, and expanded ruff, challenging all comers. The pursuers hang over him only a few yards above him, and at each effort he makes to take wing swoop down with a feint. It is considered the excellency of a Falcon to make these feints at the quarry until it is nearly exhausted, when the fatal swoop is made, and the bird instantly drops, struck dead by the hind claw having pierced its vertebræ. This manner of hunting is

probably practised both to afford more prolonged excitement to the horsemen, but chiefly from the singular mode of self-defence adopted by the Houbara, and which I have had various opportunities of observing myself. As the Hawk approaches, the Houbara ejects both from the mouth and vent a slimy fluid. A well-trained bird eludes this shower by repeated feints until the quarry's supply of moisture is exhausted; an impatient one rushes in, and gets his feathers and whole plumage so bedaubed, that his flight is materially impeded, and his swoop, when made, is irresolute.

"With a leash of Falcons, two Haggards, and a Tiercel Sakkr, I have known three Houbaras and a Sand-Grouse or two captured in a day, and the chase was terminated merely on account of the fatigue of the horses. I was never actually present at the chase of the gazelle; but it is very commonly practised, and I have seen a gazelle brought into camp that had been so taken. This sport requires, however, more birds, and is very dangerous to the Falcons, who frequently impale themselves on the horns of their prey. It is not uncommon for both pursuer and victim to fall dead at one mutual stroke.

"In the pursuit of the Sand-Grouse (*Pterocles setarius*, *Pt. arenarius*, and *Pt. guttatus*) no such dallying is allowed as with the Houbara. The covey rise, the Hawk is thrown off with a jerk, another and another are thrown in rapid succession, and each singles out his own victim and strikes him in mid air. But the same Falcon is seldom trained for both sports. The flight of the Ganga and Chukhah (as *Pterocles arenarius* and *Pterocles setarius* are named) resembles that of the Golden Plover; and their defence is the very reverse of the method of the Houbara. They attempt, in wheeling circles, to rise above the Falcon, and, scattering at a great height, often distract his pursuit; and unless the Hawk has been unhooded and thrown the very moment they were flushed they are frequently successful. The education for this chase is by means of a trained Raven, who wheels in circles over the young bird, tempting him higher and higher.

"The apparatus of African falconers seems to be the same as in the olden time among ourselves—the same hoods and gloves, the same care in feeding, and the same quaint remedies and nostrums. I never was able to discover the breeding-places of the Sakkr, though I have seen the young birds in captivity scarcely fledged. The price of a well-trained Sakkr or Lanner is from 200 to 300 Spanish dollars (£40 to £60); and I repeatedly, but in vain, offered 200 dollars for one. The Sheik considers a Falcon of the same value as a thoroughbred horse, and will exchange one for the other. No wonder, then, that I found it impossible to obtain a specimen for my collection. Indeed it would have been a crime of the blackest dye to have shot one had I had the opportunity. The Arab holds with old Master Latham:—

> "'A Faulcon is a Prince's pleasant sport.
> 'Tis sport and pleasure delightful to the eye,
> Haggard Hawke with mounting Lark to flie,
> Amidst your pleasures then take this delight,
> Maintain the Faulconer and his Faulcon's flight.'"

As a rule, the Lanner appears to be a rock-breeder; but, as above stated, it has in Spain been found nesting in trees, having taken possession of a deserted nest of some other bird of prey. When nesting in the rocks it is said to make a very slight nest, consisting merely of a little rubbish collected together, on which the eggs, usually four in number, are placed. I

possess eggs taken by Mr. Farman in Bulgaria, from the Fayoom, obtained by the late Mr. Stafford Allen, and the two eggs, one of which was figured in 'The Ibis' for 1864 (plate iv. fig. 1), taken on the Dashoor Pyramid on the 3rd April 1863. Mr. Cochrane, who obtained these eggs, writes (Ibis, 1864, p. 183):—"On the 3rd of April following, on my return from a fortnight's trip down the Rosetta branch of the Nile, the same Bedouin, whom I had asked to look out for nests for me, brought me a fine living female (*Falco lanarius*) and three eggs, which he had taken on the Dashoor Pyramid. The eggs were much incubated, and I unfortunately broke one in blowing it. The Bedouin said he had taken the bird by throwing a cloth over it at night, and in so doing had broken one of the eggs, which originally had been four in number. These eggs much resemble those before mentioned. The bird itself was brought by me to England alive, and is now in the gardens of the Zoological Society of London."

Some of the eggs in my possession closely resemble the one figured in 'The Ibis;' but others are considerably darker and more rufous in general coloration.

The specimens figured are the adult female above described, and an adult bird from Tangier, both of which are in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♀ *ad.*, *b*, ♂ *juv.* Tangier (*Olcese*). *c*, ♀ *ad.* Egypt. *d*, ♀. Tangier, April 30th, 1872, shot off nest containing three eggs (*Colonel Irby*).

E Mus. Norv.

a, ♀ *ad.*, *b*, ♀ *jun.* (*Surrey Zoological Gardens*). *c*, *d*, ♀, *e*, ♂. Tangier (*Favier*). *f*, ♂ *juv.* Province of Constantine, Algeria (*Parzudaki*). *g*, *h*, *ad.* Cairo, Egypt (*Parzudaki*). *i*, *k*, *ad.*, *l*, *juv.* Sakkara, Egypt. *m*, *n*, *juv.* Egypt. *o*, *ad.*, *p*, *juv.* Nubia (*Verreaux*). *r*. Egypt (*J. H. Gurney, jun.*). *s*, *ad.* Mogador, Morocco.

E Mus. Lord Lilford.

a, *b*, ♀. Coto del Rey, Spain, March 29th, 1873. *c*, ♀. Tangier, April 15th, 1874 (*L. H. Irby*). *d*, *e*, ♂. Egypt (*E. C. Taylor*). *f*. Coast of the Red Sea (*E. Parzudaki*).



W. Hart del. J.Smit lith. Hanhart imp

SAKER.

FALCO SACER



W.H. del. J. & J. Keulemans lith.

SAKER.
VERY OLD BIRD.

FALCO SACER.

(SAKER.)

Falco sacer, Briss. Orn. i. p. 337 (1760).
Le Sacre, Buff. Hist. Nat. Ois. i. p. 246 (1770).
Falco sacer, Gmel. Syst. Nat. i. p. 273 (1788, ex Briss.).
Falco lanarius, Pall. Zoogr. Rosso-As. i. p. 330 (1811).
Falco cherrug, J. E. Gray, Ill. Ind. Orn. ii. pl. 25 (1833).
Falco milvipes, Hodgs. in Gray's Zool. Misc. (1844).
Falco cyanopus, Thienem. Rhea, i. p. 62, taf. 1, 2 (1846).
Gennaia sacer (Gm.), Bp. Rev. et Mag. de Zool. 1854, p. 536.
Hierofalco lanarius (Pall.), C. L. Brehm, Vogelfang, p. 25 (1855).
Falco saqer, Heugl. Orn. N.O.-Afr. i. p. 27 (1869).
Falco hendersoni, Hume, Ibis, 1871, p. 407.
Ptnigohierax lanarius (Pall.), Cab. J. f. Orn. 1872, p. 156
Hierofalco saker (Gm.), Sharpe, Cat. Accip. Brit. Mus. p. 417 (1874).

Faucon sacre, French; *Würgfalke*, German; *Slagfalk*, Swedish; *Balabann*, Russian.

Figuræ notabiles.

Werner, Atlas, *Rapaces*, pl. 8?; Fritsch, Vög. Eur. taf. 2. figs. 6, 7; Naumann, Vög. Deutschl. taf. 23; Sundevall, Svensk. Fogl. pl. 72. fig. 1; Gould, B. of Eur. pl. 20; Schl. & Verst. Traité Fauc. pl. 9; Salv. & Brod. Falconry, pls. 16, 17; Hume, Lahore to Yark. pl. 1.

Ad. fronte, loris striâque obsoletâ superciliari albis: pileo et nuchâ albidis rufescente fusco lavatis et nigro-fusco striatis: corpore suprà cum tectricibus alarum fuscis, plumis rufescenti vel pallidè fulvido marginatis: remigibus extùs fuscis et intùs albis vel cervino-albidis saturatè fusco fasciatis: scapularibus et remigibus secundariis intimis nonnullis rufescenti fasciatis: caudâ fuscâ, rectricibus omnibus cervino-albo transfasciatis: capitis lateribus albis nigro-fusco striatis: mento, gulâ et pectore albis vix nigro-fusco guttatis: corpore reliquo subtùs albo, abdomine vix et hypochondriis magis nigro-fusco striatis: rostro corneo, versus basin cæruleo-corneo: cerâ et pedibus flavis: iride umbrinâ.

Juv. pileo et nuchâ magis rufescentibus profusè nigro-fusco striatis: corpore suprà saturatiore: supracaudalibus rufescenti et cervino marginatis: rectricibus centralibus haud fasciatis sed fuscis albo apicatis: rectricibus reliquis maculis ovatis cervinis notatis: mento albo: corpore subtùs cervino-albido conspicuè nigro-fusco striato et notato: pectore fere nigro-fusco vix albido striato: cerâ et pedibus pallidè plumbeo-griseis: iride fuscâ.

Adult Male (Sarepta, March). Forehead white; crown and nape white, tinged with rufous brown, and closely striped with blackish brown; upper parts generally dark earth-brown or dull brown, the

feathers with light-fulvous margins, some of the scapulars and inner secondaries barred with light reddish brown; quills dark brown on the outer webs and inner portion of the inner webs, with a few faint traces of light bars; the outer portion of the inner web buffy white, barred with dark brown; tail earth-brown, closely barred even on the central rectrices with buffy white; sides of head and neck white, sparingly striped with dark brown, the moustachial stripe very faintly indicated; chin, throat, and breast white, a few blackish brown spots; rest of the underparts white, striped, especially on the flanks, with blackish brown; bill bluish horn, lighter at the base; cere and legs dull yellow; iris dark brown. Total length about 17 inches, culmen 1·0, wing 14·0, tail 8·0, tarsus 2·35.

Adult Female (Sarepta, March). Closely resembles the male, but is larger, the crown is rather darker, and the central rectrices are not barred, but have only spots on each web towards the end of the tail; there are, however, slight traces of bars on some of the wing-coverts. Wing 15·7 inches, tail 9·7, tarsus 2·53.

Young Male (Volga). Crown and nape warm buffy white, very closely striped with blackish brown, the fore part of the crown showing very little light colour; upper parts much darker than in the adult, the upper tail-coverts with broad dull rufous and buffy white margins, the feathers on the rest of the upper parts with dull fulvous margins; central rectrices without bars or spots, but, like the rest of the tail, tipped with white; rest of the tail not barred, but with oval spots, which form indistinct bands; chin white; moustachial stripe clearly defined; underparts generally buffy white, very closely and broadly striped with blackish brown, these stripes on the breast and flanks almost hiding the buffy white colour; cere and legs pale blue-grey; iris deep brown.

Common in Eastern and South-eastern Europe, the Saker is rarer in the western portion of this continent, and is only a rare straggler in the northern and central portions. It is also found in Northern Africa, and in Asia as far east as China.

It has not been met with in Great Britain; but one occurrence has been recorded in Sweden, an example having been driven against the cathedral at Lund in a snowstorm prior to 1810. Von Wright includes it in his work on the birds of Finland, without, however, giving any instance of a specimen having been obtained; but it is common in many parts of Russia. Sabanäeff states that he met with it in the Ural and on the steppes, but it is rarer there than the Peregrine. In the districts of Kameshloff and Schadrinsk this species alone occurs. It is common in the Government of Tula; and, according to Daniloff, it is said probably to breed in the Government of Orloff. Severtzoff records it as observed annually during migration in the Government of Voronege; Bogdanoff states that it breeds in the valley of the Sura; Kessler remarks that it also breeds in the Government of Podolsk; and Artzibascheff writes that it is common in the groves on the islands of the Volga. Mr. Taczanowski informs me that it is of frequent occurrence in the Ukraine and Podolia. It is but a very rare straggler to North Germany; and I do not find any record of its occurrence in France or Portugal: but it may probably be found in Spain; for Lord Lilford writes to me as follows:—"I cannot speak positively as to ever having met with the Saker in a wild state, though I saw a Falcon on one occasion in Andalucia which I have no doubt whatever belonged to this species. There is, or was, a specimen in the museum of Cagliari which was killed in the island of Sardinia, this is the westernmost occurrence of this Falcon in Europe with which I am acquainted. I have

had several of this species in captivity, and found them very hardy birds, supporting our English climate well. A fine adult female Saker, which I bought in Paris in 1862, lived with me at Lilford in good health for eight years without any special care; this individual was said to have been sent from Persia; I have also received this Falcon from Northern Syria." I may remark that Mr. A. B. Brooke has also examined the specimen in the Cagliari Museum, which was killed on the banks of the "stagno" of St. Gilla in February 1842; and Cara, who obtained it, mentions having received two other specimens.

In Southern Germany it becomes less rare, and has bred in Bohemia. Dr. Fritsch writes (J. f. O. 1871, p. 179) that "in 1842 Voboril found this Falcon breeding on the high rocks of the Moldau, in the neighbourhood of Moran, Letek, and Vetrusic (between the railway-stations of Roztok and Libsic, north of Prague). He took the eggs and killed the old birds; and a series of seven examples in all plumages forms a conspicuous part of his collection. Voboril gives a full account of this occurrence in 'Rhea,' which article is transcribed by Palliardi in his 'Systematische Uebersicht der Vögel Böhmens.' Since the railway has been built through the valley of the Moldau, *Falco sacer* has left this locality. It is said to have occurred in 1850 on the rocks near Kost, not far from Münchengrätz. Palliardi is in error in saying that this bird occurs almost every year in autumn and spring as a migrant near Frauenberg; for I convinced myself that the specimens in the museum at Frauenberg labelled *Falco sacer* are nothing else but young individuals of *Falco peregrinus*. An old gamekeeper, who knows the bird perfectly well from the time of Voboril, asserts he observed this bird again last year near Moran."

There are several Austrian-killed specimens in the museum at Vienna; and Messrs. Danford and Harvie-Brown write (Ibis, 1875, p. 291) that it "is very rare in Transylvania. Bieltz mentions *Falco lanarius*, L., as occurring; but from his description we think it is undoubtedly *Falco sacer* (*vera*) that is meant. Herr von Pelzeln has informed Danford that he considers it much more likely that *Falco sacer* occurs in Transylvania than *Falco lanarius*. Both species have occurred, however, on the Theiss (*Zelebor*)." It appears to be common on the Lower Danube, where I have seen it on several occasions. Mr. Farman, to whom I am indebted for specimens of this Falcon and of its eggs, writes respecting its presence in Bulgaria (Ibis, 1868, p. 409):—"This noble Falcon, although not so plentiful as some others of its tribe, is in this country by no means a very rare bird. From April to October it is pretty generally to be met with on the barren wastes which stretch from Hasique to Kushetchen. Whether it remains here during the winter is a question about which I am not absolutely decided; but I am inclined to think it does. Some specimens I certainly have seen during the depth of winter; but they seem scarcer during the severe cold which freezes the mighty Danube.

"In the spring of 1865 my friend Mr. Robert Barkley, when residing at Shitangick, in charge of the railway-works in that district, obtained a pair of young Sakers from a nest situated on a tree about a quarter of a mile from the railway-works at Shitangick. He kept these birds in confinement for several months, and they appeared to thrive; but, if I recollect rightly, they ultimately succumbed to the carelessness of native servants."

Mr. Goebel, who speaks of it as being common on passage in the Uman district, in Southern Russia, found it also breeding there, and adds that it is by no means a shy bird. In Asia Minor

as well as in Greece it is, Dr. Krüper writes, not so abundant as is generally supposed, and is more frequently obtained in the winter than in the summer. He is unaware if it breeds in Greece. Canon Tristram, who met with it in Palestine, writes (Ibis, 1865, p. 258):—"This splendid Falcon only came once under my observation in the oak-forests of Bashan, where I was close to it as it perched in a tree overhead. I did not add it to our trophies, having only two charges of dust-shot in my gun, for which, of course, it cared but little. It seems to prefer the wide plains and deserts to the cliffs of the Jordan valley. The Sheikhs of the Beni Sakk'r (sons of the Falcon) make it a point of distinction to possess several of these birds trained for the chase of the gazelle; and the distinction between it and the Lanner is well known to all the Arabs. None of them seem to be aware of or to recognize the Peregrine of the coast."

In North-east Africa the Saker is much less common than the Lanner. According to Captain Shelley (B. of Egypt, p. 190) "this Falcon is rather rare in Egypt and Nubia. In 1868 I obtained two specimens—one near Kom Ombo, the other near Sioot. It is called by the Arabs 'Saker el hor;' and they train it to hunt the gazelle." Mr. E. C. Taylor obtained one near Girgeh, but never saw it again; and Mr. Blanford writes (Geol. & Zool. of Abyss. p. 289), "I killed a single specimen at Kelamet, in the Lebka valley, nearly 3000 feet above the sea. I saw a pair chased by Crows (*Corvus scapulatus*), and succeeded in shooting one. It has a remarkably pale head, whitish isabelline with dusky streaks, is dusky brown above, and dusky with broad pale edges to the feathers beneath, darker on the body and lighter on the head than in Schlegel's figure. The wing measures 14 inches, tail nearly 8. I saw a very similar specimen at Lahej, near Aden, which was shot by a friend. Persian and Afghan specimens, Dr. Jerdon informs me, have darker heads."

In Asia the Saker is found as far east as China. I find but few details respecting its range in Asia Minor; but it occurs in Persia, where, according to Mr. Blanford, it is largely used in hawking; and he believes that he saw it in Baluchistan. In Turkestan Dr. Severtzoff met with it in the valley of Tschilik, in the low mountains of Dschalanash, in September. In India, according to Mr. Blyth, it inhabits the Punjâb, Sulimáni, and Salt ranges; and Dr. Jerdon writes (Ibis, 1871, p. 239):—"The Cherrug Falcon visits the Punjab and neighbouring provinces on this side of the Sutlej in considerable numbers in the cold weather, and is still more numerous and common all along the northern and western frontier. Many are caught annually in the Punjab, near Lahore and Umritsir, and also about Ferozepore and the desert country east of the Sutlej. Near Sirsa I have seen five or six in one morning's ride; and one or two came regularly to roost on a tree close by the traveller's bungalow there. I never saw it in Kashmir; and I do not think that any are captured there. I had not an opportunity of observing what this Falcon chiefly preys on; but all the Punjab falconers assert that its especially favourite food is the large 'Sandha' lizard (*Uromastix hardwicki*)." Mr. Hume, referring to this Falcon, says (Stray Feathers, i. p. 152), "I only saw a single specimen of this Falcon in Sindh. Further north, in the Punjab, in the Ferozepore and Sirsa districts for instance, they are excessively abundant. My single specimen, a nearly adult male, with the wing 14 inches, was shot at Shahgodria, at the foot of the hills dividing Sindh from Kelat, in the Mehur subdivision of Upper Sindh. I was always on the look-out for this bird, and not unfrequently shot *Falco*

jugger, by mistake, for it; but this was the only specimen seen either by myself or any of our party." Colonel E. Delmé Radcliffe states (Ibis, 1871, p. 365), on the authority of the present Ameer of Cabul, Shere Ali, that the Saker frequently breeds in Afghanistan; and Colonel Przevalsky (in Rowl. Orn. Misc.), referring to its occurrence in Northern Mongolia, writes as follows:—"This Falcon was found by us wherever we went, from Kiachta down to the sources of the Yantze-Kiang; but it was most numerous in winter in the Zachar country and about the Koko-nor, which localities abound with alpine hares; and these, at least in winter, form its principal food."

In North-west China, Père David says, the Saker replaces the Peregrine. He frequently observed it in Mongolia, as well as in Pekin, Chensi, and in Sechuan; but I do not find any record of its occurrence further east than the above localities.

Mr. Hume (*l. c.*) has separated as a distinct species, under the name of *Falco hendersoni*, what I consider to be nothing but a very old Saker. The character on which he bases this separation is the barring of the upper parts, especially of the tail. *Falco sacer*, he says, has the central tail-feathers plain or conspicuously marked with from one to ten round or even long-oval spots, but never has a regularly barred tail, whereas *Falco hendersoni*, both in old and young plumage, has the tail regularly and closely barred. To this statement, however, I must decidedly demur. I have examined a considerable series of examples from various localities, and am firmly convinced that *Falco hendersoni* is a very old stage of plumage of *Falco sacer*; and this to some extent explains its great rarity. In my own collection and that of Mr. E. Hargitt all the birds (shot from the nest and sent with eggs) from the Volga show a tendency to pass into the *hendersoni* stage of plumage. Both the male and female above described were shot from the same nest; and the former has the tail very decidedly barred, there being also traces of barring on the upper parts of the body. The female, however, has the central rectrices marked with oval spots and not barred, though the scapulars and some of the wing-coverts show tolerably distinct barrings. In the series in the celebrated collection at Norwich the gradation in plumage between *Falco sacer* and *Falco hendersoni* is very apparent. I examined the series there last year; and Mr. Gurney has quite lately done the same; and a comparison of our notes shows that we have arrived independently at precisely the same conclusions. Five specimens from Tientsin, Oudh, Syria, Egypt, and the Volga have the upper parts plain and the central rectrices unbarred; one from the Volga is intermediate between these and Mr. Hume's *Falco hendersoni*; and one from the Volga, one from Tarsus, and a third from Athens are in the full *hendersoni* plumage. "In all the first five specimens," Mr. Gurney writes, "there are some little traces of the commencement of the rufous dorsal barring, in the form of small rufous or fulvous spots on the lower scapulars, or on some of the wing-feathers, generally the inner secondaries, especially if the feathers are lifted up to expose the portions otherwise hidden, this being especially the case in the Tientsin specimen, in which these spots are numerous, though the two central rectrices are neither spotted nor barred—a circumstance which I consider very indicative of youth."

Judging from the specimens I have examined, I find that, in the very young plumage, the Saker has the upper parts very dark, the head very closely blotched, and the tail marked with oval spots, the central rectrices being unbarred and unspotted, and the underparts very closely blotched and striped. From this plumage it gradually merges into the ordinary adult dress, the

upper parts becoming paler, the head less blotched or striped; the underparts gradually lose the large stripes; and the oval spots on the tail widen into stripes. As the underparts become whiter the central rectrices assume spots, and then distinct bars, and the upper parts begin to show barrings, until by degrees the entire upper parts attain bars as in the specimen from Tarsus, which I have figured; and then the very old stage of plumage as represented by Mr. Hume (Lahore to Yarkand, pl. 1) is assumed.

Mr. Sharpe (Cat. Accip. Brit. Mus. p. 417) has grouped this Falcon with the Jer-, Iceland, and Greenland Falcons; but this appears to me to be a mistake, for it decidedly has more affinity with *Falco jugger* and *Falco mexicanus*; and if it should prove advisable to separate the genus *Falco* into several subdivisions, I should certainly follow Dr. Cabanis in grouping these three species together under the subgeneric name of *Pnigohierax*. In confirmation of this view, Mr. Gurney points out to me that, like the Saker, the Prairie-Falcon (*Falco mexicanus*) has the central rectrices immaculate in the young plumage, whereas in the adult the back and entire tail are transversely barred as in the very old *Falco sacer*.

In habits the Saker appears to be more of a plain bird than either the Lanner or the Peregrine; and though much employed in falconry, it is scarcely as hardy a bird as the Peregrine; but it is said to be more useful in hawking gazelles than any of its allies, as it does not strike with such force, and less frequently injures itself in its stoop. It is also used to take waterfowl and hares. In India, Dr. Jerdon says, "it is flown chiefly at the Houbara Bustard (*Otis macqueeni*), also at hares, Kites, and occasionally at the Koolun (*Grus cinerea*) and the Heron. I have had several trained for Cranes, and killed a few; but it is certainly not such a good and bold bird for that large quarry as the Peregrine. On one occasion I slipped a Cherrug at some Cranes; and immediately afterwards four or five Sarus (*Grus antigone*) rose just behind them. The Falcon came up first with these, and immediately attacked one and brought him to the ground. On my riding up I found the Falcon clinging to her huge antagonist, who was in vain endeavouring to shake her off and strike her with his curved claw. I dismounted immediately and secured the prize. My falconers considered this a great feat. After the Houbara the flight is often prolonged for two or three miles; and occasionally the Bustard escapes. After hares two Falcons are often slipped, and manage to secure the hare between them; but when only one is used, a dog is generally slipped as well; and, unless the ground is very unfavourable, it generally secures a hare after it has been struck three or four times by the Falcon. It not unfrequently happens that the hare is fairly lifted off the ground by the impetus of the Falcon's swoop. The flight of the Cherrug after a Kite is very amusing, as the quarry makes extraordinary exertions, by rising to a height and dodging the stoop of the Falcon, to escape her inevitable capture."

Messrs. Salvin and Brodrick, quoting from the 'Gentleman's Recreation,' a work published in 1677, state that "the Saker is good also for lesser fowl, as Pheasant, Partridge, &c., and is nothing so dainty of her diet as Hawks long-winged. This Hawk will make excellent sport with a Kite, who, as soon as she sees the Saker (the male whereof is called a Sakeret) cast off, immediately betakes herself to and trusts in the goodness of her wings, and getteth to her pitch, as high as possibly she may, by making many turns and wrenches in the air, which if well observed, together with the variety of contests and bickerings that are between them, it cannot but be

very pleasant and delighful to the beholder. I have known, in a clear day and little wind stirring, that both the Saker and Kite have soared so high that the sharpest eye could not discern them; yet hath the Saker in the encounter conquered the Kite, and I have seen her come tumbling down to the ground with a strange precipitancy."

The Saker appears to nest chiefly in trees and not in the rocks. I have observed it when travelling in Bulgaria, but have never had an opportunity of taking its nest; but Mr. W. H. Simpson and Mr. Farman, who have found it breeding there, have published excellent accounts of its nesting-habits. The former gentleman writes (Ibis, 1860, p. 377):—"On the evening of the 29th [April] another fortunate discovery was made by the same party, and, this time, of the nest of a bird whose eggs, it is believed, were almost unknown previously in authentic cabinets. We were strolling on a low flat island in the Danube, the edge of which is well covered with tall poplars and other trees. Opposite this belt of trees, and across the river, the Turkish shore rises pretty steeply to a level with the plateau of the Dobrudsha, whilst behind, towards the mainland of Wallachia, there stretches an immense tract of low ground, partly swamp, partly forest, and partly open plain. A nest of *Milvus ater* had occupied us for a short time; but on getting close to the river again, in a place where the trees are very tall, and not thickly grouped, my friend and *cicerone* drew our attention to a good-sized nest, which was placed about one third of the way up a tallish poplar. The nest was resting upon a large branch close to the bole of the tree, and appeared exceedingly easy of access. Whilst my friend was climbing towards it, the bird slipped off, and was shot immediately. It proved to be a female *Falco sacer*. Of this I was not quite certain at the time, being then unacquainted with the distinctions between *Falco lanarius* and *Falco sacer*, though the size inclined me to decide in favour of the latter. The nest was not very much larger than those of the numerous Hooded Crows we had already examined, but was deep and comfortably lined, appearing, however, from the outside as like a large Crow's nest as one bundle of sticks is like another. The eggs, four in number, were slightly incubated. In size they seem to be intermediate between those of the Peregrine and Gyr-Falcon, being, however, longer in proportion to their breadth. Two of them are light in colour, the other two much darker. One of the latter is accurately represented in the accompanying plate (plate xii. fig. 1). It measures 2·2 inches by 1·6 inch.

"The male bird was well observed shortly afterwards. Sitting, utterly motionless, on the top of a dead tree, with his head turned over his shoulder, he seemed so mournfully conscious of the catastrophe which had befallen his family, that I felt utterly ashamed of having added murder to robbery in my desire to possess myself of an unknown bird. If the gun had still been in my hand I could have shot him easily, as he then seemed indifferent to his fate; but it so happened that he flew away before that weapon actually arrived, and thus escaped being involved in the ruin of his household."

Mr. Farman writes (*l. c.*):—"The following year (1866) I had the good fortune to be residing at Shitangick, and I carefully watched the habits of this species. Towards the middle of March I observed two pairs of these Falcons frequenting the neighbourhood; and at the end of the month I found one of these pairs were repairing the old nest, from which Mr. R. Barkley, the preceding spring, had taken the young. In the first week of April I found the nest of the second pair, at a distance of about two miles from that of the first. The nest was placed on a

solitary tree, in close proximity to which there was a little corn growing; but the general character of the surrounding country is that of wild undulating moors, with a few shrubs at long intervals, and an occasional tree or two.

"On approaching within about two hundred yards of the place, one of the birds flew from the tree in an anxious manner, as though leaving the nest, and I was much disappointed at not being able to get a shot at it. However, I ascended the tree; and when within a few feet of the nest, off flew another bird, at which of course I was unable to shoot. I found the nest quite finished, but no eggs in it. It was about eighteen inches in external diameter, neatly put together; and, unlike most Falcons' nests, it was by no means flat, but, on the contrary, was much hollowed in the middle in the form of a bowl; it was composed of large sticks at the base, the upper part being made of smaller and more pliable twigs, and lined inside with tender twigs, a little coarse grass, and a few pieces of wool interwoven together.

"On the 12th of April I again paid a visit to this nest; but this time I took a friend with me, being determined, if possible, to secure one of the birds. We approached very stealthily and quietly to within about one hundred and fifty yards of the tree, when, as before. one of the parent birds left the tree. Being, however, mindful of what happened on my former visit, I kept myself in readiness for the other bird. On coming to the foot of the tree, we stationed ourselves one on either side of it, shouted and made a great noise, but all to no purpose; no second bird appeared, nor could I distinguish any thing like a bird on the nest. I began to think that the birds had been too wise to trust again to their former device; however, to make quite sure of the fact before ascending the tree, my friend fired, when to our no little surprise out flew a bird like an arrow; and, as it came my way, I had the satisfaction of bringing it down. On ascending the tree I found that the nest contained two eggs, which, with the female bird I had shot, I brought away with me, being well satisfied with the result of my morning's walk.

"The eggs are of a slightly elongated oval form, and differ from the generality of Falcon's eggs in being decidedly more pointed at the smaller end. The two eggs taken by me from the same nest, as before described, are similar in form; but they differ much in markings: of one the ground-colour is light red covered all over with small spots and blotches of bright red, the blotches being larger and darker at the larger end; the other egg has a ground-colour of dirty reddish white, covered with small spots and rather larger blotches of a dirty red, the blotches being fewer, larger, and more distinct than on the other egg."

In my collection are eggs of this Falcon from Bulgaria and the Lower Volga, which vary considerably in colour and markings, some having the ground-colour white clouded and blotched with rufous, and others are dull red or pale red spotted with dark red. One very handsome specimen is boldly blotched with deep red on a white ground, the blotches collecting chiefly in a band round the centre of the egg; and another is as dark and closely marked as a dark Peregrine's egg. In size they vary from 2 inches by $1\frac{25}{40}$ to $2\frac{10}{40}$ by $1\frac{28}{40}$ inch.

The specimens figured are:—on the one Plate an ordinary adult female in the foreground, and a young male in the background; and on the second Plate the very old bird. This Plate is copied from an original watercolour drawing by Wolf of the specimen from Tarsus, which lived for some time in confinement in the Zoological Society's Gardens, and which was referred to by

Bree (B. of Eur. i. p. 32). Mr. J. H. Gurney, for whom the drawing was made, has kindly lent it to me for the present work.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂. Bulgaria, July 1865 (*Farman*). *b*, ♂, *c*, ♀. Volga, March (*Möschler*). *d*, ♂ *juv.* Volga (*Möschler*).

E Mus. Norv.

a, ad. Athens (*Parzudaki*). *b, ad.* Tarsus (*Mr. Barker*). *c, d*, ♂ *juv.* Near the mouth of the Volga (*M. Lefevre*). *e*, ♀ *juv.* Volga (*Verreaux*). *f*, ♀. Syria (*Verreaux*). *g*, ♀. Egypt (*Verreaux*). *h, juv.* Moradabad (*F. Barr*), *i*, ♀. Tientsin, China (*Swinhoe*).



HOBBY.

FALCO SUBBUTEO



FALCO SUBBUTEO.
XXVIII.

FALCO SUBBUTEO.

(HOBBY.)

Falco subbuteo, Linn. Syst. Nat. i. p. 127 (1766).
Falco barletta, Daud. Traité d'Orn. ii. p. 129 (1800).
Hypotriorchis subbuteo, Boie, Isis, 1826, p. 976.
Falco hirundinum, Brehm, Vög. Deutschl. p. 65 (1831).

Le Hobereau, French; *Baum-Falke*, *Lerchen-Falke*, German; *Boomvalk*, Dutch; *Lærkefalk*, *Blaafalk*, Danish; *Lärkfalk*, Swedish; *Leirohaukka*, Finnish; *Tscheglok*, Russian; *Lodolajo*, Italian; *Albanedda di Passa*, Sicilian; *Alcotan*, Spanish; *Falcão vagarote*, Portuguese; *Bieo*, Maltese.

♂ *ad.* suprà schistaceus, pileo et interscapulio saturatioribus, uropygio et scapularibus posticis purioribus, cinereis: capite summo vix brunneo lavato: loris et supercilio fulvescentibus: torque nuchali interruptâ ferrugineâ: plumis orbitalibus, regione paroticâ cum genis anticè nigris, his strigam malarem distinctam formantibus: tectricibus alarum schistaceis, dorso concoloribus: remigibus nigris, intùs versus basin rufo transfasciatis, primariis schistaceo lavatis, secundariis cinereis, uropygio concoloribus, scapis distinctè notatis: caudâ schistaceâ, pennis omnibus, duabus mediis exceptis, rufo transfasciatis et terminatis: gutture toto et collo laterali lactescenti-albis, vix ferrugineo tinctis: pectore toto albido ferrugineo lavato, ubique lineis brunneis lanceolatis striolato, hypochondriis distinctiùs notato: abdomine imo et cruribus pallidè ferrugineis, vix castaneis, immaculatis: tectricibus subalaribus fulvescenti-albis, brunneo irregulariter notatis: rostro ad basin flavo, versus apicem indigotico: cerâ et regione orbitali flavis: pedibus flavis, unguibus nigris: iride brunneâ.

♀ *ad.* mari similis, sed paullò robustior: vix tam lætè colorata: plagâ nuchali albidâ: subtus albida, nigro latè striolata: cruribus ferrugineis, nigro angustè lineatis.

♂ *juv.* nigricanti-schistaceus, plumis dorsalibus augustè fulvo marginatis, uropygio fulvo latiùs marginato: tectricibus alarum dorso concoloribus et eodem modo fulvo marginatis: pileo saturatè nigricanti-schistaceo, plumis obsoletè fulvo marginatis: torque nuchali indistinctè maculis albis indicatâ: gutture toto cum collo laterali et abdomine imo fulvescenti-albis: pectore fulvescenti-albo, ubique maculis lanceolatis nigris lineato: cruribus vix rufescentibus, nigro longitudinaliter notatis.

♂ *jun.* similis præcedenti, sed diversus corpore superiore schistaceo-nigro, plumis latè fulvo marginatis, uropygio rufescente conspicuè transfasciato: subtùs pallidè fulvescens, pectore superiore brunneo irregulariter maculato, parte imâ indistinctè striolatâ: cruribus pallidè rufescentibus, nigro lineatis.

Adult Male. Above dark slaty grey, clearer on the rump and upper tail-coverts, and deepest on the head, where there is also a slight tinge of brown; lores, a distinct eyebrow, and an ill-defined nuchal collar buffy white, inclining to ferruginous on the latter; a moustachial stripe, fore part of the cheeks, and ear-coverts dark slaty-grey like the head; hinder part of the cheeks and sides of the neck creamy white, strongly tinged with rufous; wing-coverts slaty grey; quills black, the inner web irregularly marked with transverse rufous bars, the primaries slightly washed with grey, the secondaries being

entirely of the latter colour, the shafts distinctly indicated; tail slaty grey, the shafts of the two middle feathers brown, those of the rest rufous, all but the two central rectrices barred on the inner web and tipped with ferruginous; under surface of the body creamy white, everywhere tinged with rufous, the entire throat unspotted, the breast covered with very distinct longitudinal black markings, more thickly distributed on the flanks; the axillary plumes transversely barred with buffy white and dark brown; lower part of the abdomen, leg-feathers, and under tail-coverts rich rust-red; under wing-coverts buffy white, longitudinally marked with black; bill light blue-black at the point, yellow at base; cere yellow; bare space round the eye yellow; legs yellow; claws black; iris brown. Total length 11·6 inches, culm. 0·7, wing 10·0, tail 6·0, tarsus 1·1.

Adult Female. Exactly similar to the adult male, but much larger, and not so richly coloured on the cheeks, nuchal patch, and throat; the breast is more thickly covered with black stripes than in the male; the leg-feathers and under tail-coverts marked with longitudinal brown shaft-stripes; the under wing-coverts thickly mottled with black and white, as also are the axillary plumes, which are covered with little round spots. Total length 12·5 inches, culm. 0·7, wing 10·8, tail 6·2, tarsus 1·25.

Young Male. Above brown, the head mottled, and all the other feathers on the upper surface edged with fulvous, which becomes rufous on the lower part of the back, rump, and upper tail-coverts; quills blackish, the primaries edged with fulvous, the secondaries more broadly; tail greyish brown, the middle feathers indistinctly waved with blackish, all the other feathers more or less distinctly barred with rufous and tipped with fulvous; the forehead and back of the neck fulvescent, the latter indicating an indistinct nuchal band; feathers in front of and below the eye and ear-coverts, as well as a moustachial stripe, brownish black; cheeks, sides of the neck, throat, and upper part of the breast fulvous white; breast fulvous white, blotched all over with brown, becoming striped on the flanks and lower breast; lower part of the abdomen and under tail-coverts fulvous, the thighs rather inclining to rufous, with a few longitudinal brown markings on the outside of the leg; under wing-coverts fulvous white, barred transversely with brown.

Another young specimen, preserved (like the former) in Messrs. Salvin and Godman's collection, is apparently somewhat older, and is greyish black above, with a few faint markings on the feathers of the back, more distinct on the rump, where, however, there is none of the rufous tinge noticed in the foregoing example; the head is blackish brown, with very narrow obsolete fulvous edgings to the feathers; the wing-coverts coloured exactly like the back; quills blackish, the secondaries tinged with grey, all the feathers tipped with fulvous; tail greyish above, differing from that of the previously described bird in being all grey, thus showing that this colour is gradually assumed in the young bird without a moult, as the other example had just a tinge of grey appearing irregularly on the centre tail-feathers; all the rectrices, except the two centre ones, barred with rufous and tipped with fulvous; the lores and eyebrows fulvous, but not so distinctly marked as in the younger specimen; on the other hand the nuchal band is more clearly indicated; sides of the neck, throat, and abdomen fulvous white, almost buff; the rest of the under surface of the body of the same colour, but very broadly and distinctly streaked with black; thighs inclining to rufous, with a few little black streaks, as also are the under tail-coverts; under wing-coverts strongly mottled with fulvous and black.

The range of the Hobby appears to extend over the entire Palæarctic Region, from the extreme west to the far east. It is more common in the southern countries of Europe, becoming gradually rarer in Siberia, until in the far east of Asia it only occurs as an occasional migrant. Like the Kestrel it seems to be an unsettled species, though not sedentary in so many localities

as the last-named bird. A great many Hobbies winter in Southern Europe; and, like both species of Kestrels, the full tide of migration seems to emanate from South-eastern Europe and the little-known regions of South-western Asia. Thence in winter the Hobby visits India, North-eastern Africa, and more rarely Western and Southern Africa.

In Great Britain the keeper's gun everywhere prevents the Hobby from becoming a settled resident; and the havoc created among those which used always to migrate to this country has so thinned the numbers that the bird is fast becoming a rare summer migrant. Where only a few years ago the Hobby bred regularly, it is now scarcely seen. We have been favoured with several notes from kind friends in this country, which we print entire, knowing the interest that is felt by all in this beautiful little Falcon. Most of these letters tell a sad tale of slaughter and extermination; and the present generation will, we fear, live to find the Hobby classed as one of the rarer British birds.

In Great Britain its distribution during the breeding-season is thus given by Mr. More:—

"A scarce bird in all the districts where it breeds. Though noticed by Dr. Moore as breeding in Warleigh woods, the Hobby is not included in any of the recent lists which I have received from Devonshire; nor have I any record of its nesting in Wales. It seems to be more frequent in the south-eastern and midland counties of England, its distribution thus resembling that of the Nightingale." It is doubtful whether it ever remains with us through the winter, though Mr. Stevenson mentions one having been shot in February and two in March (one of of these probably having been compelled to stay by reason of a wound). Mr. Sterland, however, in the 'Birds of Sherwood Forest,' states that he has *only* met with the bird in winter, which is pretty strong evidence that the species, if unmolested, would take up his residence here.

In Norfolk the Hobby is a regular summer migrant, according to Mr. Stevenson; and that it used to breed in Suffolk is proved by the fact that Mr. Wolley's collection contained two eggs from Burnt Fen, Middenhall, Suffolk, and two from Benacre, in the same county. Three eggs from the New Forest are also recorded in the 'Ootheca Wolleyana,' by Professor Newton.

In Messrs. Salvin and Godman's collection are two very interesting specimens of the immature Hobby, bred in Essex.

Mr. H. J. Elwes writes to us:—"I was informed by the late Mr. Spalding, of Westleton, that a pair of Hobbies bred for five or six consecutive seasons in a wood called Palmer's Grove, near Broon, in Norfolk. They laid always three eggs in an old Crow's nest, and commenced incubation about the 10th of June. A set of the eggs are now in my collection." The Hobby still occurs every summer in the immediate neighbourhood of London. Lord Lilford mentions the fact of his receiving two, which we saw before they were sent off to Lilford; and Sharpe has another in his collection, caught near Epping Forest in the middle of June, 1870, about the same time that Lord Lilford's two specimens were captured.

Mr. F. Bond writes to us:—"The Hobby I have obtained two or three times at Kingsbury; the particulars of the last one are in Harting's 'Birds of Middlesex.' I have shot it in Staffordshire, and have eggs from Dorsetshire and Cambridgeshire."

The Rev. O. P. Cambridge has told us that till within a few years he knew of the Hobby

nesting regularly in Dorsetshire; and in Mr. Brooking Rowe's book, which he has kindly sent us, we find it stated that in Devonshire it is 'scarce; has been noticed as early as March; bred at one time in the woods at Lydford, where they were said to be very numerous.'"

In Gloucestershire, Mr. Elwes says, it is rare, and he only knows of one instance of its breeding near Cheltenham.

From Cornwall Mr. Rodd records it. He says that in "this country it is a rare summer visitor. One killed by the Trebartha keeper, on the Bodmin moors, a few years since; another at Greston wood, near Launceston."

Further north the Hobby gradually becomes scarcer, though we are informed by Lord Lilford that near Lilford, until within the last few years, "the Hobby used to be tolerably common, and bred annually within a few miles till about fifteen years ago. I have not seen more than four or five, to make certain of, during the last ten years. I cannot state with any certainty the date of their appearance in the spring; but it was no uncommon thing to see several individuals in a day's partridge-shooting in September, till the years 1856–57–58."

Mr. George Cavendish Taylor informs us that in September 1866 he found a brood that had been raised in a wood a few miles distant from Rugby, in Warwickshire, and obtained a specimen.

Dr. Tristram sends a note:—"*Falco subbuteo* is very rare in the north of England. I only know of two examples in Northumberland, one of which was picked up dead by myself on the Farn Islands, having been caught on the lighthouse the day previous by Grace Darling's father, who had clipped one wing."

Mr. J. H. Gurney, jun., writes:—"As regards the occurrence of the Hobby in Durham, I can tell you that Mr. Newby has a male, which was shot from a boat at Newport, by a Mr. Wyatt, on the 14th of June, 1849. Mr. Hogg mentions another, shot near Norton (App. to Brewster's 'History of Stockton'); and Mr. Hancock has a third, shot at Streatham Castle. In Wallis's 'History of Northumberland' (p. 150), it is stated, probably on Wingate's authority, that the Hobby breeds, but is a bird of passage, and very scarce."

Sir William Jardine, writing in 1836, did not know of any authentic instance of the Hobby having been obtained in Scotland; but our friend Mr. A. R. Alston informs us that it "has been met with occasionally in the south of Scotland. Mr. R. Gray says that it has occurred in the counties of Dumfries, Roxburgh, and Kirkudbright."

According to Messrs. Baikie and Heddle, the present species is "seen in Orkney every summer, but always leaves about the end of autumn. One was killed near Kirkwall in 1845, so late as the 29th of October. It preys chiefly on small birds, but will occasionally attack even a grouse."

It has once only been obtained in Ireland, according to Thompson.

In France, Degland and Gerbe record the Hobby as common, particularly in the north. Lord Lilford also writes to us:—"It is tolerably common, and breeds in many parts of France. I have heard of it in abundance near Châlons-sur-Marne; and it is occasionally found near Angers; in the neighbourhood of Amiens I have also seen it."

Jaubert and Barthélemy Lapommeraye also say it is "very common in the south of France during the season of migration, and sometimes remains over winter, but seldom breeds here."

Bailly observes:—

"The Hobby is sedentary and very common in Switzerland and Savoy, particularly during the early part of October. At this time many specimens of both young and old birds arrive from the north of Europe, and remain for a time with us before the severe winter sets in, when they proceed to the south."

Godron says it passes Lorraine in September; and De Selys-Longchamps remarks that in Belgium it is seen "during migration in August and September. It is found then in the small groves. It repasses in the spring. It is rare."

De la Fontaine states that in Luxembourg "the Hobby occasionally breeds with us. M. Mohimont informs me that in 1841 he saw in the possession of a lad at Lahage, in the commune of Bellefontaine, canton of Etalle, two young Hobbies taken there."

In Holland, Mr. H. M. Labouchere tells us, the Hobby breeds in small numbers in the southern provinces, but is nowhere common.

In Germany it is a regular summer migrant; and, according to Kjærbölling, it is "pretty common in Denmark, arriving in April and leaving with the Larks in September and October."

Nilsson observes:—

"This Falcon belongs more to the south than to the north of Scandinavia. In Skåne it may be noticed in many of the woods and groves, and is there the commonest Hawk. It is also found on Öland and in the southern part of Norway, and is common near Gothenburg, but is not seen in the north of our peninsula. It inhabits the woods in the flats in preference to the hill-country, and frequents the edges of such woods, groves, and large gardens near the fields where small birds are to be found. . . . With us it is a migrant, departing late in September, October, or early in November, in company with Finches, Sparrows, and other small birds, which leave us in flocks; and it returns with them in spring, between the 20th and 30th of April or early in May. Occasionally one or two remain with us over the winter."

Mr. R. Collett says that it is found near Christiania in the summer, although not numerous, and breeds there, always using deserted Crows' nests. It arrives early in April, and leaves late in October.

Meyer records it as common in Livonia.

Along all the countries of the Mediterranean the Hobby is more or less abundant. In Spain, says Mr. Howard Saunders, "this species does not appear to be very numerous, though generally distributed. Lord Lilford informed me that it was certainly nesting in the pine-woods of Coria in May; and this year I received the eggs from that locality."

Machado says it inhabits the plains of Andalucia, appearing in February and leaving in the autumn.

Major Irby also sends us a note to the effect that the Hobby arrives in Southern Spain early in May, and breeds in Andalucia, but is not very common, being more a passing migrant.

The Rev. A. C. Smith, in his paper on the Birds of Portugal, says:—"*Falco subbuteo* is also pronounced to be tolerably common; but I did not meet with it, whether alive or in the museums."

Mr. C. F. Tyrwhitt Drake, writing on the Birds of Tangier and Eastern Morocco, says:—"I saw this bird twice near Cape Negro;" and Dr. Tristram, in his essay on the Ornithology of

Northern Africa, says it is "migratory in the desert, halting in the Dayats, apparently on its passage south."

Loche observes:—

"The Hobby, which the Arabs, together with all the small Hawks, call *el 'Aram*, is met with in larger numbers in all three provinces of Algeria than the preceding species (*F. eleonoræ* and *F. concolor*), with which it is often confounded, sex, age, and season of the year causing great variation in its plumage."

Dr. C. Bolle says the Hobby is "found here and there on all the Canary Islands, but is rare. It is probable that it prefers the two most eastern islands, as on these are Skylarks, which form its favourite prey."

In Malta, Mr. C. A. Wright states that it is "not uncommon in spring and autumn. As is the case with nearly all the birds of passage, the Hobby is much scarcer in some years than in others. In the autumn of 1862 I could not obtain a single specimen."

Count Salvadori records it from Sardinia as a bird of passage, and, with regard to its occurrence in Italy, writes to us as follows:—

"This bird is rather common in Italy during the migration-season, both in spring and autumn. A few are also to be found in winter; and it is probable that some couples breed here; but I have not been able to ascertain this fact personally."

In Sicily Professor Doderlein, of Palermo, states that it is very common on the vernal migration, though somewhat less so in autumn; a few pass the winter in the wooded district of the centre of the island.

"The Hobby," says Lord Lilford, "is common in Corfu in spring and autumn. I have an immature specimen which was shot by an officer of the 3rd Buffs on the roof of Fort-Neuf barracks, at Corfu, in April 1867. I saw a Hobby near Cettinje, the chief town of Montenegro, in August 1857."

Lindermayer, in his 'Vögel Griechenlands,' observes:—

"Although this beautiful Falcon is to be seen throughout all the year, both on the mainland and on the islands, I have found it commoner in spring and summer in Northern Greece, evidently migrating from the south to the north to breed in the peaceful forests of that region. I have observed that it is never seen in such large numbers in the autumn as in the spring, and believe that this arises from many old birds taking with their broods another road to their winter-quarters than the one by which they had come in the spring."

In Crete the Hobby is believed not to occur, as, according to Colonel Drummond-Hay, its place is here taken by *F. eleonoræ*. It is certain that it is not a common bird in Egypt, neither Captain Shelley nor Mr. E. Cavendish Taylor having ever met with the bird in this country. Dr. von Heuglin writes as follows:—"Occurs rarely, and only as a straggler during the winter, in Egypt. Brehm speaks of one shot in April 1849 near Damietta. I shot one in January 1856 near Cairo, and again early in June 1852 in a mimosa wood near Siut. In August 1852, near Donguolah, I saw a Falcon fly past me, which was undoubtedly a Hobby. Brehm's *Falco gracilis* in the Berlin Museum, killed on the Blue Nile, is also nothing but *Falco subbuteo*." In Palestine Dr. Tristram says it is only a "summer visitant, and rather late in its return; confined, so far as we observed, to the wooded districts, and resorting to the olive-yards and open glades."

Messrs. Elwes and Buckley write:—

"A very common summer visitor to Turkey, where it arrives about the second week of April, and frequents the groves of trees which are found here and there in the open country."

Mr. C. Farman, in his paper on the Birds of Prey of Central Bulgaria, says, "This elegant little bird, excepting only the Kestrel, is undoubtedly the commonest of all the Hawks in Central Bulgaria. It is to be met with in all parts of the country, but it appears to affect particularly the barren moors to the eastward of Shumla. In the autumn they seem to be more plentiful than at any other time of the year. The Quail, to which they appear to be particularly partial, may perhaps attract them to this locality at this particular season of the year."

Messrs. Alléon and Vian write:—

"Perhaps the commonest of its congeners during migrations, but particularly in the autumn, when it arrives with the Quails. It passes almost without interruption from about the 10th of September to the 20th October. We have generally found in the stomach remains of Quails and small birds, sometimes grasshoppers and large insects; but, apparently, those that feed on insects are generally thin, and are more often young birds in the rear of the great stream of migration."

Dr. Eversmann writes:—

"Very common in the Vorgebirge and neighbouring steppes of the Ural, as also of the Altai."

Dr. Radde found it in Eastern Siberia, and states that an old male procured there differs only from the European bird in having a light yellowish tinge on the under parts.

Dybowski and Parrex record it from Darasun, in Dauria, stating that it is "rarer than the Kestrel in summer, and leaves in the winter." Dr. Maack has met with it at Irkutsk; and Middendorff says that it "passed on migration the southern coast of the Sea of Ochotsk on the 13th of September." Dr. von Schrenk procured it on the Lower Amoor.

Mr. Swinhoe records it in his list of the Birds of China as having been found at Tientsin, Hankow (Central China), Foochow, and Amoy. Père David says it passes Peking but very rarely, as he has only obtained one specimen.

The exact residence of the Hobby in winter is as yet unknown; but at this season it visits India and Southern Africa, though in no such profusion as to lead us to suppose that these countries the winter home of the vast hordes of this Falcon which migrate southward in the autumn.

Dr. Jerdon says:—

"The Hobby is a winter visitant to India, and is not very common, though occasionally killed in various parts of the country. I have shot it near Jalna; and it has been taken at Calcutta and in various parts of the Himalayas. Its prey is small birds, Larks, &c., and not unfrequently insects. The one I shot near Jalna had its stomach crammed with Dragonflies, which I had seen it hawking over a tank just after sunset. It is stated occasionally to be seen in flocks, and to fly about at dusk. It does not breed in this country. It used to be trained to hawk Quails and Larks in Europe. I believe it to be the *Regé* of Indian falconers."

Mr. Hume, in his 'Rough Notes,' observes:—

"Of the breeding-habits of this species in India, I, as yet, know nothing. Although common enough in some parts of the Himalayahs, it is a rare visitant (and then only in the cold season)

to the plains; and if it breeds anywhere within our limits, it will be, I apprehend, in the higher ranges of the hills." Mr. R. Thompson, writing from Kumaon, the 16th September, says, "I saw yesterday our English Hobby, numbers of which visit India during the cold weather; every mountain-top of 12,000 feet and upwards had flocks of them hunting about for insects last September, when I was out in the interior. I am inclined to doubt whether the Hobby breeds anywhere in the Himalayahs south of the snowy range."

Major Irby observed it in Oudh in September 1858; and Mr. Blyth says it has been killed in Southern India.

Sir Andrew Smith was the first to discover the Hobby at the Cape; and Mr. Layard, in the 'Birds of South Africa,' writes:—

"Several specimens of this Hawk have been received, viz.:—a fine female from Swellendam; a pair, male and female, from Mr. Jackson, at Nel's Poort; one male purchased in the flesh in Cape Town; a richly coloured male also fell to my own gun on the Cape Flats; and Mr. Atmore has procured it near Blanco." Mr. Andersson procured it in Damaraland; and it has been sent from Bissao, in West Africa.

The Hobby is a true Falcon, and is in fact an immature Peregrine in every respect; long-winged, swift, and peculiarly active, it is a terror to all small birds, catching even the strong-winged Swallow by its superior power of flight. Larks, however, are its favourite quarry; and from its fondness for these its German and Swedish names, both meaning "Lark-Falcon," are derived. It is bold; and although it generally attacks small birds, still it does not hesitate to strike sometimes at birds far larger than itself. Individuals are often captured near London, which fly into the bird-catchers' nets after decoy-birds.

Mr. Gatcombe gives us an instance of this bird's impetuosity in seeking its prey:—

"Some years since I had one sent me in the flesh, which had dashed through a window at a Goldfinch in a cage, and was so injured as to be easily captured. We sometimes hear of the Sparrow-Hawk doing this; but I never knew of an instance before where the Hobby acted thus."

Dr. Eversmann, however, has been witness of a similar occurrence during his journeys in Central Asia. "The Hobby," he says, "is always on the move. Generally a pair quarter the Steppe-like flats in every direction in company. Its flight is graceful, and very swift and strong. It is very bold, and I have known it pursue a small bird through the window into my carriage when I have been travelling on the Steppes."

Lord Lilford has kindly sent us the following note:—"The Hobby is particularly docile, and easily tamed, but, from his usual and favourite prey consisting of insects, is of no use to the Falconer. I consider this bird by far the most agile and swift of all the species of Falconidæ with which I am acquainted, and I have occasionally seen it chase Swallows, but I think it was more in sport than in earnest. I never noticed that this species hovered in the same manner as the Kestrel; but in the summer-time it sometimes soars to an immense height, and 'lies upon its wings' in bright sunny weather for hours together. The Hobby is very pugnacious during the breeding-season, and the nest is often to be discovered by the cry of the old birds as they chase a passing Crow, Magpie, or Jay from their domain. I never could manage to keep this species alive for any great length of time in captivity, though I have in one instance succeeded in doing so through three moults. A young Hobby was shot in South Lancashire some years ago by my

father's gamekeeper, who told me that it followed his pointer dog, as he was Partridge-shooting, for a considerable distance, and kept stooping and striking the dog till he was quite disgusted, and came in to heel."

Mr. C. E. Diezel ('Naumannia,' 1856, p. 260) relates a curious instance of the sagacity of this Falcon:—

"In the Seegwald stood a large beech tree, on which was a very large old nest, which, although the old birds were regularly shot for eight years, either when the nest contained eggs or when feeding their young, was still tenanted again. One year, when, as the birds were so shy, they could not be approached within gunshot, the forester and a companion took turn about to watch the nest, which then contained young, in order to shoot the parent birds as they came with food. The old birds never came within shot, and still the young were not starved. After a time, however, the watchers discovered that the old birds took food and, hovering far out of gunshot above the nest, dropped it down into the latter, thus feeding the young without danger to themselves. That this really was the case, was proved by keeping a careful and continuous watch; and moreover food was found under the tree which had in falling missed its mark."

An instance of the courage of the Hobby in defence of its nest has been already given by Sharpe in his 'Birds of Cookham,' from which we extract the following:—

"When at Billing-bear, Mr. Briggs had a nest of this species in one of the plantations on the estate, and only waited till the young ones were fledged, to take them. Accordingly he mounted to the nest, and was immediately greeted with loud cries from the young birds. The male Hobby, hearing the screams of the nestlings, sailed over to the spot, and surveyed the scene of action from a considerable height. Suddenly, as Mr. Briggs was preparing to descend with his captives, the bird darted down from above with immense velocity, his wings cleaving the air with a loud *whish-sh-sh* as he shot down to within a foot of the intruder's head, and then, carried up by the impetus of his descent, he mounted as swiftly as he had stooped, and only paused a second ere he recommenced the attack. This was renewed in quick succession as Mr. Briggs descended, causing in his mind no small apprehension lest the courageous bird should strike at his face. Having reached the ground in safety, and wishing to obtain the old Hawk, he carried the young into the middle of a neighbouring field, and, having made them scream, stood ready with his gun. No sooner did the parent bird hear the young cry, than he again appeared, and from an immense height swooped at Mr. Briggs with the same astonishing velocity that had characterized his former descents. So sudden was the attack that there was no time to fire, and the bird ascended again like lightning. Would that I could now add that the Hobby escaped; but, alas! love for its nestlings impelled him to make one more stoop, and, in the midst of his next descent, the gun was fired, and the poor Hobby fell dead to the earth."

The following interesting anecdote of its courage is given by Mr. Stevenson in the 'Birds of Norfolk':—

"A pair of these birds were observed to frequent a wood at Hockering; and, doomed by the very name of 'Hawk,' the male soon fell a victim to the keeper's gun. A second and a third time the female returned with a fresh mate, but only to share the fate of its predecessors; still she managed herself to escape all dangers, and, undaunted by her repeated losses, returned with

a fourth consort to the same spot. This time the persecution was stayed, and the gallant little bird was allowed to rear her young ones undisturbed, which were seen later in the season flying about the wood. Of the three males, which were brought successively to a bird-preserver in this city, the first was in immature, the others in adult plumage; and it is the more remarkable that the female in this instance should so soon and so often have obtained fresh partners of her own species, since the Hobby, as above stated, is by no means numerous throughout the country."

It appears that the Hobby, according to several accurate observers, is very vivacious, and often annoys birds and animals simply for the sake of doing so. Thus Lord Lilford remarks above on their chasing Swallows in sport; and we now give some further accounts of the bird's habits, corroborating his Lordship's idea. Mr. F. H. Snell writes from Schwalbach:—

"In this part of the country, although this Falcon is rare, it is well-known to the peasants that it *often* catches Swallows, and is indeed called here 'Schwalbenräuber' (Swallow-robber). This summer a man told me how he had observed one pursuing two common Swallows (*Hirundo rustica*), which appeared to be an old and a young bird; and it at last caught the latter. The Martin (*Hirundo urbica*), however, appears to be safe from its attacks. Here, where this Falcon only shows itself out of the breeding-season, and always in pairs, I have often carefully observed the demeanour of the Swallows when they show themselves. So soon as the Falcons appeared and made their peculiar aërial evolutions, all the Swallows took to flight in apparent terror; only the Martins flew somewhat higher, continually sounding an alarm; and now and then single ones, more bold than the rest, would strike at the hated robber. This, however, was done with such speed and caution, that one could easily see that the swiftest of all birds of prey was before them."

Respecting its habit of chasing Swallows, the late Mr. Seidensacher, of Cilli, has also written as follows:—

"In our town the Hobbies catch the Swallows amongst the houses; and as these latter breed here abundantly, the Hobby may be seen flying about all day when it has young. Though generally it obtains its prey by surprise, or by its astonishing swiftness on the wing, it sometimes is very crafty; and I once observed a Hobby in the autumn pursuing a flight of Swallows, which latter reached a clump of rushes, and thus escaped the Falcon. The latter, however, began to circle and rose higher and higher, extending its circles, and when it had risen to some height flew away. I watched it, and observed that after it had reached a distance of several hundred paces it began to circle again, and no sooner had the Swallows, rendered bolder by its absence, left the refuge of the reeds, than it shot down on them with great swiftness, and was in a moment amongst the terrified birds."

Mr. J. Gatcombe sends us a note:—

"Another time when out with my gun in the autumn I observed a Hawk flying in circles, followed by a host of small birds. Suddenly it turned round, dashed out its foot and caught one of them, still continuing, but widening, its circle. I rushed forward and fired, when down came an adult female Hobby, dropping the little bird from its claw as it fell."

Professor von Nordmann has published the following interesting remarks on its food and vivacity:—

"It is generally admitted that the Hobby only accidentally nests in the South of Europe;

still in the Crimea and the rest of New Russia this is not the case, as wherever the smallest grove is found, there one is almost certain to discover its nest, which is often one stolen from a Magpie or Crow. During the summer it may be met with all over the Steppes, principally near pools and stagnant water, where the various feathered tribes assemble to quench their thirst. There it is the terror of the different species of Larks, and particularly of the Calandra Lark, on which it pounces from some bush, forces it to take flight, and seizes it in the air. During the summer the young and inexperienced birds of this species are the greatest sufferers, as the old ones are too shrewd to take flight, but squat close to the ground and thus escape, as this Falcon only seizes those that are on the wing. This Falcon also takes great pleasure in pursuing birds much larger than itself, which it cannot injure, but only annoy. The Numidian Cranes are particularly subjected to its malice. At the Salghir brook, in the Crimea, I observed a pair of these Falcons interfering in a perfect spirit of mischief with a flock of these Cranes, who were amusing themselves with dancing, and taking pleasure in striking first at the one and then the other of these peaceable birds, apparently deriving much amusement from this proceeding. During the breeding-season it frequents the forests and wooded districts generally, but at other seasons of the year is found in the open country, where its favourite food, which then consists of birds, is to be found."

Bailly says, "In autumn, when the first Quails migrate, the Hobbies leave the forests and are found in the groves on the plains. From time to time they visit, particularly in the mornings, the open, to chase Larks, Swallows, Quails, &c., which rise before the dogs, and do not fear to seize them even within range of the sportsman's gun."

Loche states:—"In Algeria it causes great havoc amongst the small birds, particularly those that frequent the ground, such as the Quails, Hemipodes, Thrushes, Larks, &c., and will sit motionless on a clod of earth for hours watching for them. Nor does it despise insects.

"M. Bouteille, in his 'Ornithologie du Dauphiné,' states that he has seen a party of five or six of these Falcons fishing very expertly for frogs on a sheet of water near Drac, where they were fired at for several hours, the survivors not showing alarm."

We are unable to refer to M. Bouteille's work, quoted from as above by Mr. Loche; but it appears to us that the birds spoken of by M. Bouteille were in all probability Red-footed Falcons, and not Hobbies.

Dr. L. Taczanowsky, of Warsaw, has given us the following notes respecting the food and habits of this bird:—

"The Hobby readily feeds on large insects. At two periods of the year it has in our country ample opportunities of satisfying this taste. In the month of May, when the Cockchafers (*Melolontha majalis*) are plentiful, the Hobbies go every evening to the fields and, flying about in different directions above the wheat and rye, where these insects have undergone their changes, seize those which rise into the air, and, continuing their flight, tear off the elytra and legs and devour the rest. They continue hunting after them until it is quite dark. The other period is when, during the great heat in the month of June, the different species of *Libellulæ* appear in large numbers; and then the Hobbies feed almost exclusively on these. In flying over the cornfields, or under the foliage, they seize them on the wing, and, after tearing off the wings, they devour them, like the Cockchafers, without stopping in their career. I have never seen

the Hobby hunt after insects on the ground like the Kestrels and the Red-legged Falcon. I have several times seen it seize a bat on the wing; but it threw it away directly."

In Finland, Dresser found the present species abundant in the central and southern parts of the country, and breeding even as far north as Uleåborg, where he procured several sittings of their eggs, in every instance from deserted Crows' nests, of which the Hobbies had taken possession after the young Crows had flown.

It is a migrant in this country, arriving in the spring and leaving again in the autumn. Mr. J. H. Gurney writes:—"Hobbies appear on their arrival in England in spring to affect particular localities. I know an instance of a *particular tree* on my son's estate at Northrepps, in Norfolk, on which a Hobby was shot in the spring of the successive years 1863, 1864, and 1865."

Mr. E. Seidensacher observes:—

"The Hobby nests in the forests near Cilli, and chooses as its nesting-place high, smooth-barked firs difficult to climb. It generally takes possession of an old Crow's nest, after the eggs or young have been taken away, or the latter have flown; and this it repairs for its own use. It prefers a nest to which the approach is open and above the general height of the trees; thus it is generally to be found where open woods cover the ridge of a hill.

"They are very busy when at their nest, and, long before the female lays, both birds may be seen circling high or low above the chosen place, pursuing each other, uttering their call-note and settling down near or on the nest; indeed one may always see or hear one of them at or near the chosen site. It breeds very late; and I have found on the 25th of June, and even as late as the 29th of July in 1862, fresh eggs. On the 30th of June, 1864, I found three fresh eggs, one of which was white, with the faintest markings. Near this nest, out of which young Crows had flown late in May, I saw the pair of Hobbies circling round on the 1st of June; and still the first egg was not deposited before the 28th of June. On the 21st of July, 1864, probably this same pair had two eggs not far from the former nesting-place."

Lord Lilford sends us a note on the breeding of the present bird:—

"The nest is generally an old one of the Carrion-Crow or the Magpie, and the number of eggs usually three or four; but I once received five young ones out of one nest. I have received young Hobbies five or six times within the last eight or nine years taken from the nest in South Lincolnshire, where this Falcon appears to be more common now than in any other part of England. Dragonflies are a very favourite prey; and a wood bordering a piece of water or marshy ground in a district frequented by this bird would be the most likely locality for the nest. I have known of the Hobby breeding in the immediate neighbourhood of Harrow-on-the-Hill, and last year received two living birds caught close to London in bird-catchers' clap-nets."

The following curious instance of the mating of a Hobby and a Sparrow-Hawk was contributed to the 'Zoologist' (p. 3276), by Major Irby in 1851:—

"About the end of last May a male Hobby and female Sparrowhawk paired together at Witchingham, in Norfolk, and enlarged a Ringdove's nest which was in a fir tree about nine or ten yards from the ground. Five eggs were laid in it, one of which was taken by the gamekeeper, whom I had previously told to keep for me any Hawks' eggs he might take. As soon as the other eggs were hatched, he shot both the Hobby and the Sparrowhawk, leaving the young birds to starve. Fortunately I was able to get the Hobby preserved, although it had been hung

up more than a month. The egg which the gamekeeper kept for me has rather more red about it than is usual for a Sparrowhawk's egg to have, and not so much as the Hobby's usually has; but the Hobby's sometimes very much resembles the Sparrowhawk's. I have heard of another instance, also in this county, of the Hobby and Sparrowhawk pairing together in a wild state; but the birds were both shot before any eggs were produced."

The eggs of the Hobby can generally be distinguished from those of the Kestrel at the first glance, although varieties of the one species occasionally approach the eggs of the other species in appearance. Hobbies' eggs are usually more yellowish in tinge than Kestrels', and very rarely shade off into rufous. We have a series now before us (out of Dresser's collection), obtained in Finland and Styria, which do not vary greatly in colour and markings. In size they vary from $1\frac{23}{40}$ inch by $1\frac{12}{40}$ to $1\frac{33}{40}$ by $1\frac{14}{40}$, and have the ground-colour yellowish white, closely covered with minute yellowish-red spots, and blotches distributed generally over the egg. One rather richly coloured egg, procured by Dresser near Uleåborg, in Finland, has a zone of reddish spots at the larger end; and another, procured by the late Eduard Seidensacher near Cilli, Styria, is altogether very rufous in colour, and is heavily blotched with pure rufous at the larger end. Another variety, procured near Cilli out of a nest with two other well-marked eggs, is pure white, with a few very minute reddish spots scattered over it. This egg was taken as late as the 30th of June.

The general shape of the Hobby's egg is roundish oval; but occasionally eggs elongated and tapering towards the smaller end are found.

Mr. Howard Saunders writes to us:—

"Our English name Hobby seems to be a corrupted pronunciation of Haut-bois, in confirmation of which I may state that a place in Norfolk, 'the Haut-bois,' is invariably called 'the Hobbies.' This derivation is further confirmed by the French name, '*faucon Hobereau*,' an evident corruption of 'Hautbois(r)eau,' the 'eau' being the substantive termination signifying 'frequenter' or 'inhabitant of,' and the 'r' having entered for the sake of euphony. And a frequenter of the large woods this species most emphatically is; and no one knew this better than our Norman-French ancestors, who, from their constant attention to all species available in hawking, were better acquainted with the habits and characteristics of Falcons than most naturalists of the present day. It is well known that the Hobby is not easily kept in confinement for any length of time; but I can cite a single and remarkable instance to the contrary. Mr. Sabine, a friend of mine, purchased a nestling in Leadenhall Market in July or August 1849; and it only died, in the absence of the proprietor, in June 1864; so that it was just fifteen years old. I may add that I have frequently seen and handled this identical bird."

Latham, in the Supplement to his 'General Synopsis of Birds,' gives the Latin name of *Falco subbuteo major* to the "Greater Hobby" mentioned in the last-named work (Gen. Syn. Suppl. ii. p. 47). This is originally taken from Bechstein, and apparently refers to the Peregrine Falcon, but has been applied by most authors to the Hobby, which can scarcely be said to be at any time "as large as a Raven." We omit this name from our list of synonyms, not being satisfied that it should really be referred to *F. subbuteo*. *Falco pinetarius*, Shaw (Gen. Zool. vii. p. 195), given with a query as a synonym of *F. subbuteo* by Mr. G. R. Gray, is founded on the "Greater Hobby" of Latham, and when that species is identified must be added as a synonym.

In the case of a common bird like the Hobby it were needless to recount the many figures which have been given of the species in the various works; but we cannot omit to recommend to our readers two admirable pictures of this Hawk, viz. one by Wolf in the eighth part of Mr. Gould's 'Birds of Great Britain' (where an adult male Hobby is depicted with a dragonfly in his claws), and another spirited drawing in Brodrick's 'Falconers' Favourites' (where the bird has just missed his stoop at a Skylark and is recovering for another attempt).

The descriptions and figures are taken from an adult pair of birds in our own collection, the male being from Malta and the female from Russia, killed at Cholmogory on the 5th of August, 1859. The young birds are described from specimens taken in Essex, and now in the collection of Messrs. Salvin and Godman. Those figured in the second Plate are from the collections of Mr. Howard Saunders and Mr. J. H. Gurney, jun., the young in down being the property of the last-named gentleman.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. Malta (*C. A. Wright*). *b.* Cholmogory, August 5, 1869 (*Meves*). *c.* River Volga (*L. Sabanaëff*). *d, e.* Near Copenhagen (*A. Benzon*). *f.* Eastern Russia (*Renard*).

E Mus. H. E. Dresser.

a, b, c. Pomerania (*H. E. D.*).

E Mus. Salvin and Godman.

a. ♂. Oudekirk, Holland, May 29, 1856 (*J. Baker*). *b, c. juv.* Essex (*F. G.*).

E Mus. Lord Lilford.

a. ♀. Near Oxford, May 1852 (*L.*). *b.* ♂ *juv.* Shot on Fort-Neuf barracks, Corfu, April 1859 (*L.*). *c.* ♂ *juv.* Coto del Rey, Andalucia, May 1869 (*L.*).

E Mus. H. B. Tristram.

a. ♂. Farn Islands, May 13, 1859 (*H. B. T.*).

E Mus. J. H. Gurney, jun.

a. ♂. St. Leonard's, September 23rd, 1870 (*Kent*). *b.* Norfolk (*Seeley*).

E Mus. Howard Saunders.

a. Andalucia (*H. S.*).



J.G.Keulemans del. Mintern Bros. imp

MERLIN.
FALCO REGULUS



MERLIN

Adult female and Young

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FALCO ÆSALON.

(MERLIN.)

Falco lithofalco, Brisson, Orn. i. p. 349 (1766).
Falco æsalon, Brisson, tom. cit. p. 382 (1766).
Le Rochier, Buff. Hist. Nat. Ois. i. p. 286 (1770).
L'Émérillon, Buff. tom. cit. p. 288, pl. xix. (1770).
Falco æsalon, Tunstall, Ornithologia Britannica, p. 1 (1771).
Falco regulus, Pall. Reise, ii. Anhang, p. 707 (1773).
Falco lithofalco, Gm. Syst. Nat. i. p. 278 (1788, ex Briss.).
Falco æsalon, Gm. tom. cit. p. 284 (1788, ex Briss.).
Falco falconiarum, Gm. tom. cit. p. 284 (1788, ex Buff.).
Falco smirillus, Savigny, Ois. d'Egypte (1809).
Falco sibiricus, Shaw, Gen. Zool. vii. pt. 1, p. 207 (1809).
Falco cæsius, Wolf, Taschenb. deutschen Vogelk. i. p. 60 (1810).
Hypotriorchis æsalon (Tunst.), Boie, Isis, 1828, p. 314.
Æsalon, Kaup (*Falco æsalon*, Gm.), Natürl. Syst. p. 40 (1829).
Æsalon lithofalco (Gm.), Bp. Rev. et Mag. de Zool. 1854, p. 536.
Æsalon orientalis, C. L. Brehm, Naumannia, 1855, p. 269.
Æsalon regulus (Pall.), Blyth, Ibis, 1863, p. 9.
Hypotriorchis lithofalco major, A. E. Brehm, Verz. Samml. C. L. Brehm, p. 1 (1866).
Hypotriorchis lithofalco minor, A. E. Brehm, ut suprà (1866).
Hypotriorchis æsalon major, A. E. Brehm, ut suprà (1866).
Hypotriorchis æsalon minor, A. E. Brehm, ut suprà (1866).
Lithofalco æsalon (Tunst.), Hume, Rough Notes, i. p. 89 (1869).
Falco æsalon β. *alaudarius*, Severtzoff, Turk. Jevotnie, pp. 63 & 114 (1873).

Seog, Gaelic; *Faucon Émérillon*, French; *Zwergfalke*, German; *Esmerejon*, Spanish; *Smeriglio*, *Smerlo*, Italian; *Smelleken*, Dutch; *Steenfalk*, *Blaafalk*, Danish; *Dvergfalk*, *Stenfalk*, Norwegian; *Dvergfalk*, Swedish; *Pikkuhaukka*, Finnish; *Derbnic socol*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 447, 468; Werner, Atlas, *Rapaces*, pl. 11; Kjærb. Orn. Dan. pl. 3; Frisch, Vög. Deutschl. taf. 87; Fritsch, Vög. Eur. taf. 3. fig. 7, and taf. 4. fig. 4; Naumann, Vög. Deutschl. taf. 27. figs. 1–3; Sundevall, Sv. Fogl. taf. 26. fig. 3; Gould, B. of Eur. pl. 24; id. B. of G. Brit. i. pl. xix.; Salvin & Brodr. Falconry, pls. 7, 8; Schlegel & Susemihl, taf. 10. figs. 2, 3; Bechstein, Orn. Taschenb. taf. 6.

♂ *ad.* fronte sordidè albidâ: capite summo et corpore suprà cærulescenti-schistaceis, plumis centraliter nigro-fusco striatis: collo postico rufescente, fulvido notato: remigibus nigricantibus in pogonio interno

albido fasciatis, primariis nonnullis et secundariis vix schistaceo apicatis: caudâ cærulescenti-schistaceâ, fasciâ magnâ subapicali notatâ et quinque fasciis obsoletis nigro-fuscis transfasciatâ: capitis lateribus albis nigro-fusco striatis, superciliis, regione paroticâ et colli lateribus rufescente lavatis: mento et gulâ albis immaculatis: corpore subtùs albido, rufescente lavato et nigro-fusco striato: tibiæ plumis rufescentibus, fere immaculatis: rostro cærulescenti-corneo: cerâ et pedibus flavis, unguibus nigris: iride fuscâ.

♀ *ad.* mari dissimilis: major, corpore suprà brunneo vix griseo tincto, plumis omnibus centraliter nigro-fusco striatis et rufescente brunneo marginatis et guttatis, pileo saturatiore: collo postico rufescenti-albido, brunneo notato: alis rufescentioribus quam in mare, fasciis in pogonio interno rufescenti-cervinis nec albis: caudâ saturatè brunneâ vix griseo lavatâ, rufescente cervino fasciatâ et albido apicatâ: mento et gulâ albis fere immaculatis: corpore subtùs albido, valdè brunneo striato, subcaudalibus et crisso albis centraliter vix fusco striatis: tibiæ plumis vix cervino lavatis.

Adult Male (Malta, October 1861). Forehead dirty white, crown and nape dark ashy blue, with a slaty tinge, all the feathers on the forehead, crown, and nape with blackish central stripes, fore part of the back crossed by a narrow rufous collar, the sides of the nape being also rufous; back, rump, upper tail-coverts, inner secondaries, and wing-coverts clear slaty blue, all the feathers having dark shaft-stripes; quills blackish, closely barred on the inner web with white, some of the primaries and the secondaries with narrow slaty-blue tips, and most of the quills with obsolete slaty markings on the basal portion of the outer web; tail slaty blue, paler than the back, with a broad subterminal black band, and remains of five other bands at regular intervals between the base of the tail and the large band; sides of the head and neck whitish, narrowly striped with blackish, and on the eyebrows, ear-coverts, and sides of the neck washed with rufous; chin and upper throat pure white; rest of the underparts white strongly washed with rufous, and broadly striped with blackish brown, the long thigh-feathers, however, are pale rufous, almost unstriped; bill bluish horn, darker at the tip; cere and legs yellow, claws black; iris dark brown. Total length 11 inches, culmen 0·7, wing 7·9, tail 5·3, tarsus 1·45.

Adult Female (Stettin, April). Differs considerably from the male, not only in size but in plumage; upper parts dark brown, with a faint greyish tinge, all the feathers with blackish shaft-stripes, and edged and spotted with reddish brown, those on the crown being darkest, and least marked with reddish brown; hind neck intermixed with greyish white and pale reddish white; wings browner than in the male, the barrings being pale reddish or warm buff instead of white; tail dark brown, with a faint greyish tinge, crossed by six rufous buff bands, and tipped with buffy white; chin and upper throat nearly pure white, rest of the underparts white, very broadly striped with dark brown, the feathers being in fact dark brown with very broad white lateral margins; under tail-coverts and crissum white, with narrow shaft-stripes; thigh-feathers slightly washed with buff. Culmen 0·75, wing 8·5, tail 5·9, tarsus 1·55.

Young Male (Malta). Closely resembles the female, but is a little greyer on the tail and rump, the underparts are less strongly marked with brown, and the crown and back are more rufous.

Nestling in down. Covered with white down slightly tinged with pale creamy buff.

Obs. I note that (in his Catalogue of Accipitres, p. 407) Mr. Sharpe says that the adult female is "similar to the male, but a little larger," which is quite contrary to the testimony of Macgillivray, Naumann, Nilsson, and other ornithologists, who have had the amplest opportunities of observing this bird in a natural state; and I may add that, although I have had numbers through my hands, all carefully sexed by myself or others, I have never seen a female which could be said to be similar to the male. It may therefore be as well to add a few remarks respecting the specimens before me, which, I may say, fully

confirm my own former experience, and exactly coincide with what Naumann says respecting the various stages of plumage. The youngest specimen I possess is one only a few days old, from Kautokeino, which is covered with white down, slightly tinged with creamy white on the crown. The next in age appears to be a female, and is from Novaja Zemlia (Nova Zembla); compared with the female above described, this bird is much more rufous on the upper parts, especially on the head, and has the underparts very thickly marked with dull umber-brown. A somewhat older bird than this is a young male in the collection of Mr. C. A. Wright, of Malta. This specimen has the upper parts darker than the young bird from Novaja Zemlia; and the rump is tinged with grey; the underparts, though tolerably closely striped with dark brown, are less so than in the young female above described. A somewhat older bird than this young male is the one above described, also from Malta. A male from Skara, in Sweden, has the upper parts in the fullest plumage; but the underparts are still in the closely striped immature dress, and lack the rufous tinge of the fully adult bird. From these we come to the adult female and male above described; but I find that the female frequently attains, at probably an advanced age, a dress somewhat different from that of the old female above described, but paler, and has the upper parts washed with dull pale slate-grey or mouse-grey. This stage of plumage was first pointed out to me by Mr. Joseph Wolf, the well-known artist, to whom I am indebted for the use of a careful water-coloured sketch of the bird in this dress, as well as of the young male, both taken by him from life. These have been copied by Mr. Keulemans, and are to form the second Plate. Since receiving the sketch from Mr. Wolf, however, I have obtained females in this plumage from several localities, one from Malta (lent to me by Mr. C. A. Wright) being an especially large and fine specimen.

The Merlin is found throughout Europe, being a summer visitant in the north and a winter resident in the south. It visits North Africa during the winter, and is found in Asia as far east as China, and breeds in Northern Siberia. It does not occur in America, being replaced by *F. columbarius*.

In Southern and Central England it is, as a rule, a winter visitant; but instances are on record of its having bred here. Mr. A. G. More says (Ibis, 1865, p. 10) that the Rev. M. A. Mathews informed him that it had been seen on Exmoor in June. Mr. Farren (Zool. p. 8159) states that he found the nest of the Merlin in low trees in the New Forest; but the fact of the nest being thus placed makes one believe that the Kestrel may have been mistaken for it. Mr. Rogers, however, is said to have birds and eggs from the New Forest. Dr. Bree says that it breeds in Essex. Mr. More further adds that according to Mr. Lingwood it breeds occasionally in Hereford, according to Mr. Shaw in Shropshire, Mr. Tracy says that it also breeds occasionally in Pembrokeshire, Mr. Salvin states that it nests regularly in Derbyshire, Mr. Eyton records it from North Wales, and in North England it becomes a regular breeding species.

In Scotland it is commonly distributed throughout the country, and is met with even on the outer Hebrides; and in Ireland it is indigenous in the northern counties as well as in the south of the island; and Thompson says that it breeds in the county of Antrim, in the mountains of Londonderry and Tyrone, in Down, Tipperary, Cork, and Waterford. It does not occur in Greenland; and the most western limit from which it is recorded is in lat. 57° 41′ N. and long. 35° 23′ W., where a specimen, now in the Norwich Museum, was caught at sea by Mr. Edward Whymper in May 1867. In Iceland it breeds numerously, and is a common summer visitant, arriving late in March and leaving in October. Captain Feilden writes that in the Færoes it is

resident, and not uncommon, and, contrary to its mode of nidification in England, it invariably breeds in rocks and precipices extremely difficult of access. Throughout Norway it is numerous; according to Mr. Collett it arrives in April, or sometimes in March, in Southern Norway, and breeds commonly throughout the northern portions of the country from the Russian frontier down to the Dovre, where it is replaced by the Kestrel. Below the fell-ridges it is rarer, and on the fells occurs almost solely in the birch-region; still a few breed in the lowlands, as for instance, at Ringerike, Modum, and Höiderne, near Christiania. Most leave in October; but occasional stragglers are seen in November, and Mr. Siebke observed one at Töjenhavn as late as the 15th December. It has, however, never been known to winter in Norway. In Sweden it is, as in Norway, most common in the northern provinces; and Nilsson says that the southern boundary of its range is about the northern limit of that of the Kestrel. According to Mr. Malm, however, it is said to breed near Gothenburg; and according to Wallengren, also on Gottland. In Finland it is more common in the north than in the southern portions of the country; but I met with it in almost all parts I visited. It is common in Northern Russia, and I have received many from Archangel, and one from as far north as Novaja Zemlia.

Sabanäeff says that in the Ural it is rarer than the Hobby. He did not observe it further north than in about 57° N. lat. It breeds in Central Russia, and Meshakoff says that it is not rare in the south-western portions of the Government of Vologda. It occurs during migration only, so far as I can ascertain, in Poland and the Baltic Provinces, and Borggreve doubts whether it ever remains to breed in North Germany, where it occurs during the seasons of migration, and a few winter in the south-western part of that country; Boeck states that it breeds in Prussia; Tobias observed it in the mountains of Lausitz during the summer; Gloger writes that it breeds rarely on the highest ridge of the Riesengebirge; and Schauer says that he saw it in the High Tatra on the 30th June. In Denmark, as in Northern Germany, it is met with during the spring and autumn, and appears to be tolerably common, but, Mr. Benzon says, appears never to remain there to breed.

It occurs also during the two seasons of migration in Belgium, being more especially found in Ardenne and Campine, and is supposed to remain over winter; but, on the whole, it is a rare species. It is said to breed sometimes in Luxemburg. In Holland it has been observed throughout the entire summer; and Schlegel and Zander suppose that it breeds there. Von Droste often observed it in East Friesland during the breeding-season, but believes the birds seen were only stragglers. It is by him said to be common on Borkum during the seasons of passage, and some few individuals remain over the winter. Mr. Labouchere tells me also that he has reason to believe it may probably breed in Holland, but adds that he has failed to trace any authentic instance of its nest having been found in that country. Throughout France it is generally distributed, but only during migration.

Professor Barboza du Bocage does not include it in his list of the birds found in Portugal; but it occurs in Spain, where, Lord Lilford says, it is a common and well-known winter resident. Graells says that it is rare in the province of Madrid; and Machado gives the same information respecting its occurrence in the province of Seville.

In Savoy, according to Bailly, it is abundant, especially the birds of the year, from October to February, a few pairs remaining to breed, retiring for that purpose to the high mountains,

where they make their nests in the crevices of the rocks, and also at the tops of the large oaks and firs. In the Pyrenees it is also said to nest in trees; and, as stated below, Mr. Collett has found it in Norway nesting in trees. In Italy, Sicily, and Sardinia it occurs during passage, and also winters there, but, so far as I can ascertain, it does not appear ever to remain to breed. Schembri and Mr. C. A. Wright speak of it as being not uncommon at Malta during passage; but Captain Feilden tells me that he has only obtained two examples during the twelve months he has resided there. Lord Lilford says (Ibis, 1860, p. 7) that it is frequently met with in Epirus during winter, and adds that all he saw, either dead or alive, were in adult plumage.

It is stated by both Lindermayer and Von der Mühle to be common in Greece, in fact quite as much so as the Hobby. Erhardt, however, did not meet with it in the Cyclades. In Southern Germany it is much rarer than the Kestrel, and chiefly met with during the autumn passage. Curiously enough, contrary to the experience of Lord Lilford in Greece, Dr. A. Fritsch says (J. f. O. 1871, p. 180) that he has very rarely met with adult birds in Bohemia. According to Gloger it breeds in the Riesengebirge. In the Danubian principalities it occurs as in Turkey and Greece, during migration or in the winter, but does not appear to remain to breed. Professor Von Nordmann also states that it is common in Southern Russia during the two seasons of passage, leaving for only a very short time in midwinter; but he does not think that it breeds in the steppes. Eversmann, however, says (J. f. O. 1853, p. 62) that it inhabits the steppes during the summer, leaving in the autumn. Strickland obtained it in Asia Minor, near Smyrna, in the winter season; and Canon Tristram records it (Ibis, 1865, p. 258) as being not uncommon in Palestine during winter, where he frequently saw it both on the coast and in the central plains. He saw the last at Bashan on the 11th March. It occurs in Africa; and is, according to Captain Shelley, extremely abundant in Egypt in spring, but rarely passes as far south as Nubia. Mr. E. C. Taylor and Captain Shelley both remark on the great preponderance of males as compared with females; and the latter adds that, though he has seen as many as thirty in a day, he never met with a single female. Von Heuglin writes (Orn. N.O.-Afr. p. 35), "it straggles to Africa in winter and spring, the larger number being young birds. We shot an old male on the 20th April at Cairo. Brehm met with a small party of about ten individuals on the 14th March, 1852. Dr. Hartmann states that it is common in the Acacia-wilderness, between Der and Wadi Sebua, in Northern Nubia; but I have never seen one so far south. . . . . In Leyden there is a specimen said to be from Sennaar." Dr. A. E. Brehm obtained one near Chartoum in February. It likewise occurs in North-west Africa in the spring and autumn; and Loche says that it has been seen in the breeding-season in Kabylia and near Boghar. Mr. Taczanowski, in his notes on the avifauna of Algeria, says that he saw an adult male about the middle of December.

To the eastward it occurs as far as China; but I do not find it recorded from Japan. It has been met with at Erzeroum; but Messrs. Blanford and St. John did not meet with it in Persia, though it doubtless occurs there. Dr. Jerdon speaks of it as being a rare visitant to the extreme north-west frontier of India during the cold season, and says that Dr. Leith Adams observed it in the north-west of the Punjab. According to Mr. A. O. Hume (Stray Feathers, i. p. 157) it is a mere cold-weather straggler into Sindh, and rare there. He only once saw it, but was informed by Captain Malden that he had shot it near Kotree; and Mr. James had also procured

a specimen. Severtzoff speaks of it as occurring during summer in North-eastern and South-eastern Turkestan, and during winter in the north- and south-western portions of that country. During the winter it is met with to an altitude of about 4000 feet, and during passage occurs even as high as from 10,000 to 14,000 feet. He speaks (*l. c.*) of a subspecies as occurring in Turkestan; but I do not think, judging from his description, that it is specifically different from the common Merlin.

Both Von Middendorff and Dr. G. Radde record it from Siberia. The former says that it arrived at Aldan about the end of April, and breeds near Udskoj-Ostrog; and Dr. Radde considers it rather uncommon in Siberia, and adds that it has not been observed on the Lower Amoor; it only passes through the elevated steppes of Mongolia during migration; and he says that he observed young birds at the Tarei-nor from the end of August to the middle of September. It has been obtained in China by Mr. Swinhoe, who records it from Amoy, Pekin, and Chefoo. In America it does not occur, being replaced by a very closely allied species (*Falco columbarius*), which differs merely in having only two bands less on the tail than our Merlin, being in other respects almost precisely like that species.

For its size the Merlin is certainly one of the boldest and gamest of the Falcons. Exceedingly swift on the wing, it is able to catch most of the small birds, and subsists chiefly on these and small mammals; but it is also said to feed, to some extent, on insects. It will attack and kill larger birds than itself; and Mr. R. Gray says that he has more than once noticed Merlins frequenting the heart of the city of Glasgow, where they feed chiefly on the Pigeons, which are numerous. It frequently haunts the shores and marshy localities, where it creates no little havoc amongst the numerous Sandpipers which frequent these places, and will attend the sportsman when he is shooting in order to take its share of the game; Lord Lilford says that when shooting near the mouth of the Butrinto river, in Albania, he has seen as many as five wounded Snipe carried off by a Merlin in an hour. In the days when falconry was one of the most highly esteemed of field-sports the Merlin was greatly used, being, however, looked on as more particularly a lady's Falcon. It is, perhaps, only surpassed by the Hobby in swiftness. Messrs. Salvin and Brodrick, in their well-known work on falconry, say that the strongest females may be trained to fly Pigeons admirably, and, from their small size and the way in which they follow every turn and shift of the quarry, are better adapted for this chase than the Peregrine. Referring to its dexterity on the wing they write as follows:—"We once saw a Merlin in pursuit of a Swallow, which chase continued as far as the eye could trace it, the Hawk being about a yard behind its game, and following the most rapid evolutions of the Swallow, as if moved by the same impulse." They say that the Sky-Lark affords the finest flight for the Merlin, and for this chase it was used by our ancestors.

In most localities the Merlin places its nest on the ground; but it also breeds in trees in wooded places, and in Southern Norway it is said by Mr. Collett to deposit its eggs in an abandoned nest of *Corvus cornix*, the inside being partly filled up with moss by the new occupants, whereby the eggs are crowded into a corner; but in the naked coast regions of that country it invariably places its nest on the ground. Mr. Collett informs me that Mr. Hartman, the botanist, found a nest of the Merlin on the Dovre, placed on a pine, and in the same tree was a Fieldfare's nest. The Merlin's nest contained young, and that of the Fieldfare also;

and these two families appeared to be dwelling in perfect harmony. I am indebted to Mr. Seebohm, of Sheffield, for the following notes on this species, which is tolerably common on the moors near that town.

The Merlin, Mr. Seebohm writes, "is a regular summer migrant to the moors of South Yorkshire and North Derbyshire, where they would commit sad havoc among the young Grouse if they were not relentlessly persecuted by the gamekeepers, who keep a close watch upon their well-known breeding-places. The Merlin arrives upon the moors towards the end of March or beginning of April, and feeds principally upon the smaller birds frequenting the district (the Meadow-Pipit, Grey Linnet, Twite, &c.), which his rapid powers of flight enable him easily to fly down without resorting to the manœuvres which the clumsier Sparrow-Hawk is compelled to take advantage of. These moors are the constant breeding-place of three species of Hawk—the Kestrel, the Sparrow-Hawk, and the Merlin. The Kestrel hovers over the ground at a considerable height, and pounces down on a mouse, and occasionally a lizard or a young Grouse, as the pellets they cast up abundantly testify. The Sparrow-Hawk skims over hill-tops or hedges, or round rocks, and comes upon its prey unawares. The Merlin, on the contrary, fairly flies it down. The site selected for a nest varies in different localities, especially amongst birds of prey. On the moors in the neighbourhood of Sheffield, however, the Sparrow-Hawk invariably builds in a tree, the Kestrel as invariably chooses a cleft in a rock, and the Merlin always builds upon the ground. The date of nidification is evidently chosen with relation to an abundant supply of food for the young, as in the Cyclades Eleonora's Falcon postpones its operations until August, so that the young may be fed upon the flocks of Quails returning southward on their autumn migration; the Merlin lays its eggs about the middle of May, so that the voracious young may be fed upon young Grouse. A slight hollow is chosen amongst the tall ling; whatever roots or dry grass may chance to be upon the spot are scratched into the rudiments of a nest; and the only materials actually selected by the bird appear to be a few slender twigs of ling to form the outside of the structure, and which are generally broken from the heather overhanging the nest. The site is usually sloping down to a stream, and commanding a good view of the moor; and a patch of heather some couple of hundred yards square has often contained a Merlin's nest every year for the last dozen years, whilst no other breeding-place could be found nearer than eight or ten miles. There would be nothing extraordinary in this if it could be proved that the same pair, or their descendants, annually visited and occupied the same breeding-station; they might easily be supposed to have obtained a vested right in the estate, and to have defended it successfully against all comers. There are two of these breeding-places on the Sheffield moors—one near Ashopton, and the other near Stimes; and I am well acquainted with the gamekeepers in both localities. They agree in telling me that every year they shoot or trap one or both of the parent birds, generally both, and that in no case during the last ten years have they ever allowed the young birds to get away. If one of the birds is shot before they have begun to breed, the remaining one soon gets another mate; but later on in the summer this is not the case. The only way in which to account for the selection every year of the same locality by a fresh pair of birds seems to be to suppose that the Merlins migrate *en masse*, and that as they pass each recognized breeding-place, if the former occupants are not there to take possession, another pair immediately occupy it. The facts of the case seem to warrant the conclusion that the selected

sites for breeding are well known to a large circle of Merlins; otherwise it is difficult to account for the choice always falling upon the same site, out of an indefinite number of others apparently equally eligible. I have always found the number of eggs laid by the Merlin to be five. The following summary of the fate of the Merlins in the two localities I have named is interesting as showing that in the year 1872 the mysterious reserve stock of Merlins was apparently exhausted in this locality. The gamekeepers have found out by experience that it is of no use to shoot the birds before they have begun to breed, as they so easily replace the loss. They shoot or snare the cock bird as soon as they can after the hen has begun to sit. In the neighbourhood of the nest are little rocky elevations on the ground which the cock bird uses as feeding-places, and which are easily found by the feathers of Meadow-Pipits, Linnets, young Grouse, &c. scattered round them. Upon these knolls traps are set; and as soon as the cock bird is caught, the hen is easily shot off the nest."

Mr. Seebohm obtained full particulars of the fate of the unfortunate birds which bred at the two breeding-places above referred to as follows:—"Nest near Stimes, 1869. Hen shot as she was bringing food to the young. Cock shot with food in his mouth a quarter of an hour afterwards. Young all destroyed.

"1870. Nest on the same bank. Cock trapped and killed in the morning. Hen trapped in the afternoon in my presence. Eggs all taken, 28th May.

"1871. Nest on the same bank. Two eggs taken by myself 22nd May. Nest afterwards forsaken. Birds very wild, and neither was shot this season.

"1872. No Merlins appeared this year.

"1873. Nest on the same bank. Eggs taken, and both birds destroyed.

"Nest near Ashopton, 1869. Both parents and all the young were destroyed by a party of gamekeepers after the young had left the nest.

"1870. Hen shot soon after arrival. The cock found another mate, which was soon afterwards also shot, and again replaced. Both these were shot before the nest was discovered.

"1871. Nest on the old bank. Both old birds and the young were destroyed.

"1872. No Merlins appeared this year.

"1873. Nest on the old bank. I did not ascertain the fate of the parent birds."

The eggs of the Merlin, from four to six in number, resemble those of the Kestrel, but are, on an average, smaller in size, and scarcely vary so much in markings, though one often sees very handsome varieties. The usual type appears to be dull brick-red, spotted and mottled with darker brownish red, and slightly tinted with purple; but amongst the series in my collection are three from the same nest which are warm reddish white with a creamy tinge, tolerably closely spotted with dark brick-red; and another egg is almost uniform dull chestnut-red, sparingly marked with a few blackish brown spots.

The specimens figured are, on the one Plate, an adult male and female, these being the specimens described, and in my collection. On the second Plate, which is taken from original sketches made by Mr. J. Wolf, are figured a very old female and a young male.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.*, *b*, ♂ *juv.* Altenkirchen, Rhenish Prussia (*C. Sachse*). *c*, ♀. Stettin, April 1854 (*H. E. D.*). *d*, ♂. Skara, May 13th, 1870 (*Meves*). *e*, ♂, *f*, ♂. Malta, October 1861 (*C. A. Wright*). *g*, ♂. Olympus, Macedonia, February 16th, 1870 (*Krüper*). *h*, ♂, *i*, ♀, *j*, ♀. Archangel, May 1874 (*Piottuch*). *k*, ♀. Archangel, June 30th, 1874 (*Piottuch*). *l*, ♀. Archangel, July 12th, 1874 (*Piottuch*). *m*, ♀. Mezen, July 18th, 1873. *n*, *juv.* Karskoe more, Novaja Zemlia (*A. Aagaard*). *o*, *pull.* Kautokeino, June 1871 (*Meves*).

E Mus. Howard Saunders.

a, ♂ *ad.* Yorkshire Moors (*T. E. Buckley*). *b*, ♂ *ad.* Malaga, January 7th, 1872. *c*, ♀. Valencia, Spain, November 8th, 1871. *d*, ♀. Grao de Valencia, October 6th, 1872. *e*, ♂ *juv.* Egypt (*E. Cavendish Taylor*).

E Mus. J. H. Gurney, jun.

a. Swaffham, Norfolk, September 20th, 1868 (*Ellis*). *b*, ♂. St. Faith's, Keswick, February 11th, 1867. *c*, ♀. Devonshire, March 20th, 1867 (*Gatcombe*).

E Mus. C. A. Wright.

a, ♀. Malta, October 1869. *b*, ♂. Malta, November 1871 (*C. A. W.*). *c*, ♂. Malta, November 1872 (*C. A. W.*).

E Mus. R. Swinhoe.

a, ♂ *juv.* Shanghai, February 1873 (*R. S.*).

E Mus. H. B. Tristram.

a, ♀. Greatham, Durham, September 14th, 1868 (*H. B. T.*). *b*, ♀. Greatham, Durham, December 1867. *c*, ♂, *d*, ♀. Bewick Moor, Northumberland (*H. B. T.*). *e*, ♀. Mediterranean, October 28th, 1863 (*H. B. T.*). *f*, ♂. Gadava, March 11th, 1864 (*H. B. T.*).



FALCO VESPERTINUS.

FALCO VESPERTINUS.

(RED-LEGGED FALCON.)

Falco vespertinus, Linn. Syst. Nat. i. p. 129 (1766).
Cerchneis vespertinus, Boie, Isis, 1828, p. 314.
Erythropus vespertinus, Brehm, Vög. Deutschl. i. p. 76 (1831).
Tinnunculus vespertinus, Gray, Gen. of B. i. p. 21 (1844).
Falco rufipes, Beseke, Vög. Kurlands, p. 13, t. 3. 4 (1792).
Pannychistes rufipes, Kaup, Natürl. Syst. der europ. Thierw. p. 87 (1829).
Tinnunculus rufipes, Kaup, Classif. Säug. u. Vög. p. 108 (1844).

Faucon Kobez, French; *Rothfuss-Falke*, German; *Rödbent Falk*, Swedish; *Rödfod Falk*, Danish; *Falco cuculo*, Italian.

♂ ad. unicolor plumbeus: tibiis cum crisso castaneis: tectricibus subalaribus plumbeis.

♀ ad. supra cinerascenti-plumbea, nigricanti-fasciata: capite toto et corpore subtus ferrugineis.

Adult Male (no. 1). General colour above dark plumbeous; wing-coverts like the back, but slightly paler, and distinctly inclining to grey on the greater coverts; quills silvery grey above, black beneath, shafts black; tail black; under surface of the body blue-grey; thighs, vent, and under tail-coverts rich chestnut; under wing-coverts greyish black; bill horn-coloured, blackish at tip; cere and bare space round the eye bright brownish red; iris bright brown; legs bright brownish red; claws yellowish white, horn-coloured at points. Total length 11·5 inches, wing 9·7, tail 5·8, tarsus 1·0.

Adult Female (no. 2). Entire head, back, and sides of neck rufous; entire back ashy grey, each feather broadly barred with darker grey, the interscapulary region tinged with rufous; wing-coverts coloured like the back; quills ashy grey, the shafts black, the inner web of each feather barred with oval markings of white tinged with rufous, those on the innermost being less distinct, the secondaries above inclining to silvery grey; tail similarly barred like the back, the last bar being very distinct and broad, the tip of each feather dirty white; feathers in front of the eye black; throat and cheeks white tinged with rufous; a moustachial line, as well as the entire under surface of the body, together with the under wing-coverts rufous, like the head; bill, cere, bare space round the eye, iris, legs, and claws as in the male, but not so bright. Total length 12 inches, wing 10·1, tail 6·3, tarsus 1·0.

A young male (no. 3) differs from the adult in having the upper surface of the body rather lighter, the wings slightly more dingy, the innermost secondaries distinctly barred and tinged with rufous, the inner web of each quill marked as in the female with oval spots, all the tail-feathers, excepting the four middle ones, which are black, similarly marked to the female; the under surface of the body is grey, as in the adult male, excepting a few mottlings of darker grey on the upper part of the breast, and a tinge of rufous here and there; under wing-coverts for the most part white tinged with rufous, and evidently becoming grey; cere, bare space round the eye, and legs reddish yellow; claws yellowish white, with dark grey tips.

Another young male (no. 4) is dark grey on the back, rather paler on the scapulars with fulvous or rufous edgings, the feathers being banded alternately with grey and fulvous on the lower portion of the back and rump and on some of the scapulars, these latter being conspicuously tipped with rufous; wing-coverts grey, edged with fulvous like the back; quills very dark grey, the secondaries edged and tipped with white; the innermost secondaries barred alternately with grey and fulvous; all the inner web of the quills barred with white; tail-feathers for the most part reddish, tinged on the upper surface, with clear grey, banded with black; head very pale; forehead pure white; crown of the head rufescent, with longitudinal brown markings; nape somewhat varied with white; feathers in front of and round the eye black; cheeks white; ear-coverts brownish; throat and sides of the neck white; breast whitish, slightly tinged with fulvous, longitudinally streaked with dark brown, these stripes becoming narrower on the abdomen; vent and lower abdomen fulvescent, the thighs being especially strongly tinged with rufous; bill pale bluish horn-colour, the under mandible yellowish, the upper mandible also strongly tinged with yellow.

A young female (no. 5) has the throat much whiter and the under parts much lighter than in the adult female; the forehead is hoary, and the head slightly striated with dark brown.

Another, younger bird (no. 6), marked as female, but which appears to us to be a young male, differs from the last-mentioned bird in having the feathers of the breast mesially striped with dark brown, and the feathers of the crown very distinctly marked with longtudinal lines of dark brown.

The nestling (no. 7) is entirely covered with short, close, white down; and the colouring of the soft parts appears very pale.

Until recently it was supposed that this Falcon was spread all over the eastern portion of the Palæarctic Region; but Radde in 1863 showed that it was really another species which represents our Red-legged Falcon in that quarter of the globe: this eastern representative, which he called *Falco erythropus*, var. *amurensis*, is distinguished in the adult male by having the under wing-coverts white instead of dark plumbeous, the female and young bird also being different, and resembling more the Hobbies in plumage. Shortly afterwards Mr. Gurney received *F. amurensis* from Natal; and in 'The Ibis' for 1868 (p. 42) a Plate of the species is given, and many interesting details recorded respecting it. The occurrence of both species in Africa naturally raises the question as to where their ranges coalesce; and uncertainty on this point still remains in some instances. It is, however, tolerably certain that *F. amurensis* is a more eastern bird, breeding in China, where Swinhoe obtained it; and it is, moreover, the one which occurs in India. In South Africa both species have been observed; but even here *F. amurensis* still seems to preserve its eastern range, having only occurred once in Damaraland, where its place is taken by *F. vespertinus*. On the other hand, *F. amurensis* goes further south than the last-named bird, as it has been sent by Andersson from the Knysna.

The Red-legged Falcon does not often visit the British Islands. Yarrell cites four instances of its occurrence in Norfolk in 1830, two in Yorkshire, and one in Durham, as also one in the Devonport Museum; and Stevenson tells us of one instance of its capture in Suffolk, in July 1862. Besides these, we know of one other example being shot by our friend Mr. Howard Saunders at Rottingdean in 1851. Thompson knew of only one specimen having been killed in Ireland, in the summer of 1832.

In Sweden it is a rare visitor, as Nilsson never knew of its occurring there; but Mr. Meves has recorded five specimens as having been obtained in the country, viz.:—a bird of the second year and a young female, now preserved in the Upsala Museum; two young birds at Lund; and a female, in the second year's plumage, in Mr. C. Moller's collection, at Wedels-bäck. Kjærbölling relates that he shot a male at Laesoe, in Denmark, and observed the female at the same time; but no other instances of its occurrence there are known. In Finland it has lately been more frequently observed, according to Dr. Malmgren; and M. von Wright records the capture of two examples, one as high as Uleåborg. This latter place is the most northern point at which the species has yet been found; but it is a common bird in the Archangel Government, and, according to Prof. Lilljeborg, particularly numerous near Kargapol. We have ourselves seen an adult male shot near Archangel, now in the possession of Mr. David Morgan, of Walthamstow. Meyer says it is found in the large forests of Esthonia and Livonia, where it also nests, and is not rare near the Peipus Lake. We are indebted to Mr. Meves for the following observations made during his recent journey in Russia:—

"I first observed the Red-legged Falcon, singly, early in June on the canal-journey between Schlusselburg and Novaja Ladoga. On the 26th June I found it at Andorna, on Lake Onega, on marshy meadows overgrown with willow bushes and straggling trees. On a dead fir tree five or six used to perch in the evening, of which, however, I was only able to procure one adult male. They seem to prefer high and open objects as a perching-place, and thence make, like the Hobby, distant raids after larger insects. At night, between eleven and twelve o'clock, I saw a large number, about thirty, not, however, in a close flock, hunting out of gunshot after insects.

"I saw this bird later on at Archangel, but only singly; and there it was very shy. On my homeward journey I saw on the 13th August, about thirty versts north of Kargapol, from twelve to fifteen individuals, chiefly young birds; and they generally perched on the telegraph wires; I was, however, not fortunate enough to procure one, as I had only some almost useless powder I had purchased on the journey."

Mr. Meves gives a careful description and measurements of this bird, which agree with those of an adult male in our own collection. He further states that the bird in question had probably been incubating, as it had two large bare incubation-spots on the abdomen. The stomach contained insects, chiefly *Libellulæ*.

As regards its distribution in Germany, Naumann writes as follows:—

"In this part of the country (Anhalt) I have seen it several times, and have observed that it does not frequent the large dense forests, but affects groves which border on plains, meadows covered with straggling bushes, and such-like open places, and here it prefers to dwell. In the daytime it is generally flying about in the fields. As a migrant it comes to us at the end of April or early in May, then proceeds to its breeding-stations, which probably are further to the north, and returns to us on its road back to warmer climes, where it winters in August and September."

Naumann knew nothing of its breeding-habits; and we may here remark that the above surmise of this most accurate observer has not proved correct; for, as we elsewhere state, the breeding-stations of this bird are to the east and south, and it is only found far north in but few localities, Archangel for instance.

Gätke includes the Red-legged Falcon in the avifauna of Heligoland. In Holland and the Netherlands it has not yet been noticed; but in Lorraine M. Godron mentions one specimen having been killed near Nancy.

Degland and Gerbe state that it is rare in France, where, however, it has been said to have bred. It is, however, certainly found during migration in the Department of Isère, and in the southern departments. M. Bouteille ('Ornithologie du Dauphiné,' t. i. p. 75) says that ten or twelve of these birds were seen early in May 1824 for two days flying above the water in the marshes on the plain of Tullius. They were not wild, and were nearly all killed. Since then others have been seen in the same locality; and in 1842 another batch passed. It is stated that there was a large migration of these birds in Provence during the month of November 1821.

Bailly notices it as rare in Savoy, but more abundant in Switzerland. In Spain, Lord Lilford saw it once in Andalucia, but does not think it is a common bird in any part of the country. This is also Mr. Howard Saunders's opinion; and he has written to inform us that he has never met with it himself in Spain, but that it is an occasional visitant to that country, principally to the east coast, but years often elapse without its occurrence.

Salvadori considers it to be a spring bird of passage in Italy, and sends us the accompanying note:—

"I can add very little to the excellent description given by Savi (Orn. Tosc. vol. i. p. 50). This bird arrives here in May, and then for the space of twenty days is often seen on low marshy ground, but not in every place indiscriminately. It is very common in the Campagna Romana; and in the Tuscan Maremma I have often seen it in the Marche, near the Adriatic shore. In the autumn it is not to be found in Italy, except in the islands of Sicily and Malta (Doderlein & Wright). I used to catch this Falcon very easily, on a damp plain near Umbria, by fixing a grasshopper on the ground and covering it with limed twigs, when the bird would swoop either in its flight or from a neighbouring tree down on the insect, and remain caught on the twigs. They thrive well in confinement, and I used to feed them on raw ox-heart. To my knowledge this bird has never bred in Italy."

In Styria, Seidensacher states, "It appears with us about the middle of May, on migration, in larger or smaller numbers. Its passage through Styria is annual and regular, of which I have convinced myself in several localities, as, for instance, at Peltan, where it appears every spring. I have not had an opportunity of observing it in the autumn, but it has been shot also at this season of the year."

Mr. Cochrane found it breeding in Hungary; and Dresser has seen plenty of specimens in the Pesth Museum, near which town he was informed it bred numerously. Messrs Elwes and Buckley (Ibis, 1870, p. 75) state that these birds were "first noticed on the 25th of April, when they appeared in considerable numbers near Sindal, in Bulgaria, and frequented ploughed fields, where they hawked about for flies and insects. We cannot say whether they breed in this part of the country; but Mr. Farman does not mention the fact in his list." As regards their occurrence in Turkey, Mr. Robson writes to us as follows:—

"These birds are pretty common during the spring and autumn migrations in Asia Minor and south-eastern Europe. They generally arrive in small flocks, and stay a short time in various localities; stragglers constantly arrive and depart onwards two or three weeks after the main

body of the migration has passed. They prefer open tracts of country, sparsely covered with low bushes, as their hunting-ground. I have seen as many as sixty flying backwards and forwards for hours in fine weather, feeding after the manner of Bee-eaters; but their movements are not so quick. They also wander from valley to valley hunting for food. In damp weather they sit much on the ground, moping like Swallows; and they also rest on mounds of earth and low bushes, whence they fly from place to place close to the ground after their beetle food. At this time they are easily approached; but as soon as the weather brightens up they become more lively and mount up and hover above the ground like a Kestrel, though perhaps not quite so high, occasionally stooping down and capturing a beetle. A few young birds are sometimes taken with limed twigs in the autumn by small-bird-catchers; in summer I have never observed them, their dates of arrival being about the middle of April, and their departure taking place about the middle of September. Their food seems to consist almost entirely of Beetles. Male and female both vary in intensity of colouring."

MM. Alléon and Vian (Rev. et Mag. de Zool. 1869, p. 306) say that during their passage these Falcons are nearly as numerous on the Bosphorus as Hobbies, particularly in the autumn, and are seen there every year. In southern Russia the Red-legged Falcon is very common, arriving in April. As regards its eastern range, Radde (Reisen Süd-Ost Sib. p. 102) says that he procured it in the Tumkinskian Steppe, in Western Siberia, and after that he met with no species of Red-footed Falcon till *E. amurensis* appeared in the middle of Amoorland. Mr. Keith Abbott (P. Z. S. 1834, p. 51) shot the present species at Trebizond; but De Philippi did not meet with it during his travels in Persia.

Lindermayer says the Red-legged Falcon is found throughout all Greece, arriving late in March or early in April, and breeding there, and, according to Erhard, is even said to winter on the islands of the Archipelago. Lord Lilford records it from Corfu; and the Rev. Dr. Tristram states that in Palestine it is a summer migrant, but scarce. Specimens are also in our collection obtained by J. H. Cochrane in Syria. Dr. von Heuglin says it visits north-eastern Africa in winter, and he met with it in Lower Egypt in September. Mr. Gurney kindly informs us that he has a memorandum that Speke procured a specimen at Bogue, in Uzinza; but he adds that when he made this note he was not aware of the difference between *E. vespertinus* and *E. amurensis*, so that perhaps the bird was really of the latter species. Professor Barboza du Bocage has received a large series of the present species from Benguela, forwarded by Signor Anchieta. And "in Damaraland," says the late Mr. Andersson, "it appears during the wet season in incredible numbers. They then come, not by thousands, but literally by tens of thousands."

In Malta the present species is abundant during migration; and we have numerous specimens in our collection sent to us by Mr. Wright. In Algeria, Captain Loche states that it is common, and breeds.

As regards the habits of the present bird, the best account we know of is given by A. von Nordmann in 'Demidoff's Voyage dans la Russie Méridionale,' iii. p. 82, as follows:—

"The Red-footed Falcons appear with us in the first portion of April, and often in astonishing numbers. They are generally accompanied by several other species, such as *F. tinnunculus*, *F. æsalon*, and *F. subbuteo*. During the day the flocks disperse; but about 4 P.M. they all

reassemble to commence their remarkable performances, which are continued through the night. These consist in a sort of aërial evolution with which these birds amuse themselves; they fly in a straight line to a fixed point, from which they return, and follow continually nearly the same route, never passing certain limits in their flight to and fro.

"The large area of the botanical gardens at Odessa is a locality which they particularly affect to carry on these evolutions, probably because, failing better-wooded localities in this neighbourhood, these gardens serve as a refuge during the night. It is generally on warm evenings with a clear sky that they perform these flights. The individuals forming the flock seldom observe any but the right direction; they do not fly very close, but at distances apart, at the side or above each other. Their flight is soft, and they often sail without moving the wings. Arrived at a certain point they turn rapidly, describing an acute angle. At the commencement they fly very high; but towards the evening they descend by degrees, and finish by descending so low that they can be reached by a shot. After having continued these evolutions some hours, the whole flock goes to rest, choosing trees which stand in close proximity. Here they keep as thickly together as possible; and I have seen twenty or thirty together perched on a tree of seven years' growth, occupying chiefly the crown and large branches of the tree. They show so little fear that they may be easily approached, particularly when one has not fired a gun. After having rested about half an hour, they recommence their flight, which does not cease before dusk, when they seek their quarters for the night. The whole flock appear to be guided by some particular instinct; for they wait until two or three individuals proceed towards some tree, and then the whole, as if by signal, pitch on the same tree, which is covered with them. Their numbers are sometimes so great that they cannot find room, and utter loud cries while disputing for the best places. I have often got a dozen birds by firing into such a cloud of them, not counting the wounded which escaped. I have often been astonished by the disproportionate numbers of males and females. Once, out of eleven killed, but three were females; and on another occasion only two females out of nine. In the air I have also always counted more males than females.

"In the botanical gardens of Odessa are some dense conifers about 9 feet high, standing close together, where these birds love to roost. I have tried to drive them from here by repeated shots several times the same evening, but they always returned.

"These aërial excursions which we describe, are often continued to May, when these birds disperse to undertake the work of nidification. . . . .

"Their food consists chiefly of all sorts of insects; and I have often found their stomachs full of ants and coleoptera living together. The Red-legged Falcon seizes on the wing with ease the large species of grasshoppers, locusts, and Neuroptera, such as *Gryllus*, *Libellula*, and *Æschna*. Its proportionally long feet are of great service to it in doing this. It also searches amongst the droppings of horned cattle for scarabæi of the genus *Onthophaga*.

"It is stated in several works that this Falcon sometimes catches small birds. I think these are exceptional cases. I myself know of no instance, and I know that small birds exhibit no fear of it. On the other hand, I have sometimes found in their stomachs remains of small lizards. I can state another fact, viz. that they often use the nest of the Magpie. In the country of Kowalewka, on the Bug, I found three nests occupied by this Hawk, the construction of which left no doubt as to their having originally belonged to Magpies. . . . .

"Early in October, sometimes rather later, they quit the south of Russia. A short time before this the flocks reunite, and if the evenings are fine they again perform their evolutions.

"When one of these birds is wounded, and one goes to pick it up, it throws itself on its back, and spreading its wings and tail defends itself with its claws. Its cry resembles that of the Kestrel, but is uttered less often than that of the latter bird."

Radde (J. f. O. 1854, p. 54) says, in Southern Russia it "passes later than *Falco tinnunculus*, appearing about the end of April in small bands, but does not breed in the Crimea. On the 20th April I saw between ten and twenty individuals on the Steppe, at Simferopol. Insects of the *Blaps* and *Pimelia* families, which are so common here in the spring, form their food. A month later I found them nesting on the Dnieper, for which purpose they appear to prefer the high willows. A young male shot here had the dark grey dress of the adult male mixed with reddish brown feathers like those in the plumage of the female. According to this the bird does not assume the full plumage after the first moult; but several years elapse before it attains the fully adult attire."

Lord Lilford (Ibis, 1860, p. 8) writes as follows respecting the present species:—

"Arrives in Corfu occasionally in great numbers about the latter end of April. In the spring of 1857 I did not hear of, or see, more than two specimens in the Corfu market; but in April 1858 this species was very abundant in the Ionian Islands, particularly at Fano, a small rocky island to the north of Corfu, celebrated as a favourite resting-place for immense flights of Quails during their vernal migration. This Hawk appears to be very fearless of man. I have watched a flock of five or six for upwards of an hour, during which time they often approached within ten or fifteen yards of where I sat, though I was in no way concealed. As far as my own observation goes, this species only remains for a few days in Corfu on its passage northwards. I have never heard of its occurrence in the island, except in April and May. The stomach of a specimen which I skinned contained the remains of large night-flying moths. Both this species and the Common Hobby are to be observed on the wing as late as 8 or 9 P.M. The bird often alights on the ground, and runs with great ease and speed."

Dr. Th. von Heuglin found this bird to be an irregular winter visitant to north-eastern Africa. It generally appeared in September in Lower Egypt, in companies of from six to twelve individuals; during the daytime it frequented the fields, hovering and picking up grasshoppers, which are there abundant, and which it often devours on the wing. They will settle on the durrah grass, small bushes, hedges, or fences, and towards night they fly off to their resting-places—tamarisk or nabag trees. Old males are generally more abundant than females and young birds. We observed them singly along the whole of the Nile, nearly to Chartum, once in Southern Nubia as early as the 11th of September, generally, however, not before October. In the spring it is very rare in Egypt, but according to Rüppell occurs also in Arabia.

Naumann gives the accompanying particulars respecting the habits of the Red-legged Falcon:—

"Its flight is light, often for short distances, sailing and pretty, but it lacks the arrow-like swiftness of that of the Merlin or Hobby. It resembles more that of the Kestrel; but the difference is slight, and can only be noticed by a close observer, and one cannot describe it in words. So also with the voice, which is closely like that of its three above-mentioned relatives,

and still very different. A clear, shrill *Ki*, higher and clearer than the *Kli* of the Kestrel, is uttered by this Hawk often, and repeated several times in succession, and it strikes the observer more than its flight. Its note has a distant resemblance to the call of the Lesser Spotted Woodpecker (*P. minor*), but is clearer and much louder. It may be heard particularly towards evening. Trees which have scathed tops are frequently its resting-place; and it is often seen resting, but not for long at a time. In the fields it may be observed flying from stone to stone, or hillock to hillock, peering after its prey, but it does not fly about so continuously and perseveringly as its congeners; after sundown, however, its flight is more continuous, as it then hawks after the beetles which swarm at that time.

The following details are given by Mr. Hewitson ('Eggs of British Birds,' vol. i. p. 28):—

"Mr. Cochrane had the good fortune to meet with this species in Hungary during the breeding-season; and by him I have been supplied with a series of eggs to draw, and the following very interesting information:—

"'The Red-footed Falcons arrive in the country about the middle of April, and have laid their eggs early in the following month. They make no nest for themselves, but, after a fight with the lawful owners, take possession of those of the Crow, Rook, or Magpie, altering or repairing them according to their own taste.' Mr. Cochrane says that he has found their eggs in a nest of *Corvus corone*, that they are sometimes even six in number, but most commonly four or five, sometimes in isolated trees, at other times as many as six or seven pairs in one tree, in a rookery, exactly as Rooks in England. Mr. Cochrane must have been as much surprised when he found these birds breeding in company, as we were when we first discovered colonies of Fieldfares in Norway."

We have before us nine eggs of this bird from Dresser's collection, all taken in Hungary. Four of these, which seem to be typical specimens, were taken at Lazlár, near Pesth, and received from Mr. Johann von Frivaldsky, of the Pesth Museum. The ground-colour of these eggs is pale reddish yellow, and they are spotted and blotched all over with small spots of dark reddish brown, resembling somewhat dark varieties of the eggs of the Hobby. Two others are somewhat lighter, both in ground-colour and markings, and are much more of the Hobby type. The rest have the ground-colour lighter, almost dirty white in colour, and have the surface markings darker and larger, thus approaching more to the eggs of the Lesser Kestrel in appearance. In size they vary from $1\frac{1}{2}$ inch by $1\frac{8}{40}$ down to $1\frac{14}{40}$ by $1\frac{6}{40}$, and in shape are oval.

In the Plate are depicted an old male and female and a young male. The specimens described are in various collections, enumerated below. All are from Europe, with the exception of spec. no. 4, which is a young male from Damaraland.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. Moscow (*Karl Sachse*). *b, c, d, e, f, g.* Malta (*Wright*). *h.* Syria (*Cochrane*). *i.* Alexandria (*S. Stafford Allen*. *j.* Damaraland (*Andersson*).

E Mus. Salvin and Godman.

a, b, c. Hungary (*O. Salvin*).

E Mus. Lord Lilford.

a. Tangiers (*Irby*).

E Mus. H. B. Tristram.

a. Asia Minor (*Robson*). *b*. Russia (*L. Brehm*). *c, d*. Damaraland (*Andersson*). *e*. Ovampo (*Andersson*).

E Mus. Lord Walden.

a. Asia Minor (*Robson*). *b*. Damaraland (*Andersson*).

E Mus. Howard Saunders.

a, b. Volga (*Möschler*).



ELEONORAN FALCON.

FALCO ELEONORÆ.

FALCO ELEONORÆ.

(ELEONORAN FALCON.)

Falco eleonoræ, Gené, Rev. Zool. 1839, p. 105.
Falco arcadicus, Licht. Isis, 1843, p. 329, taf. 1.
Falco concolor, Mühle, Orn. Griechenl. p. 14 (1844. nec Temm.).
Dendrofalco eleonoræ, Bonap. Rev. Crit. Orn. Europ. p. 131 (1850).
Dendrofalco arcadicus, Brehm, Naum. 1855, p. 268.
Dendrofalco eleonoræ, Brehm, Naum. 1855, p. 268.
Hypotriorchis eleonoræ, Bonap. Cat. Ois. Eur. Parzud. p. 2 (1856).
Falco dichrous, Erhard, Naumannia, 1858, p. 25.
Falco radama, Roch et Newton, Ibis, 1862, p. 266 (nec Bonap.).

Figuræ notabiles.

Gené, Mem. R. Accad. Tor. ser. 2. tom. ii. taf. 1 *a*, 2; Licht. Isis, 1843, taf. 1; Bonap. Faun. Ital. Ucc. pl. 1; Bree, B. Eur. i. p. 44; Fritsch, Vög. Eur. taf. 3. figs. 3, 5, 6; Gurney, Ibis, 1869, pl. xvi.; Schl. & Susem. Vögel Eur. taf. 53, 54.

♂ *ad.* omninò nigricanti-fuliginosus, suprà vix brunneo tinctus, scapis plumarum angustè nigro indicatis: remigibus nigricanti-brunneis, primariis extùs et subtùs et secundariis suprà clariùs schistaceo lavatis: tectricibus supracaudalibus lætiùs schistaceis: caudâ suprà clarè schistaceâ, subtus paullò rufescente, fasciis nigricantibus indistinctis transnotatis, scapis suprà nigris, subtùs flavicantibus: genis sordidè schistaceis, nigricantibus: subtùs nigricans, vix rufescente tinctus: hypochondriis et cruribus clariùs schistaceis: subalaribus et subcaudalibus nigricanti-schistaceis, harum scapis distinctè indicatis: rostro corneo, versùs basin mandibulæ flavicante: cerâ pallidè viridi-flavâ: pedibus flavis: iride chocolatinâ.

♀ suprà nigricanti-fusca, schistaceo lavata: nuchâ indistinctè rufescente: plumarum dorsalium scapis nigro indicatis: remigibus nigricanti-schistaceis, secundariis angustissimè fulvo marginatis: caudâ suprà clariùs schistaceâ, pennis centralibus fulvo marginatis, rectricibus omnibus fulvo terminatis, subtùs fuscescente, rufo et fusco profusè transfasciatâ, scapis suprà brunneis, subtùs albicantibus: loris albidis: plumis orbitalibus et regione paroticâ cum vittâ malari distinctâ nigricantibus: genis posticis et gutture toto lætè fulvescentibus, scapis nigro distinctè indicatis: corpore reliquo subtùs lætissimè fulvo, parte inferiore rufescente, plumarum omnium parte centrali brunnescente, strigam conspicuam formante: subcaudalibus haud ità distinctè striatis: cruribus castaneis, lineis nigricantibus longitudinaliter striatis: subalaribus schistaceo-nigricantibus, plumis omnibus rufo marginatis: rostro ut in mari colorato: pedibus viridi-flavis: iride chocolatinâ.

♂ *juv.* similis feminæ adultæ, sed magis schistaceus, nuchâ haud rufescente: pectore rufescente, scapis nigris distinctè indicatis, parte superiore nigricanti-schistaceâ obscurâ: hypochondriis et subcaudalibus castaneis schistaceo clarè lavatis: subalaribus nigricanti-schistaceis vix rufescente lavatis.

Adult Male. Above dark slaty grey, with just a tinge of brown here and there, rather clearer grey on the

rump and upper wing-coverts, all the shafts distinctly indicated by a black line down the centre of the feather; quills blackish brown, washed with slate-colour, which is rather clearer on the secondaries, the shafts plainly indicated, the lower surface of the wing somewhat paler, the primaries clearly washed with grey on the under side; tail clear grey above, with indistinct fuscous edgings to the feathers, blackish grey underneath, inclining to rufous near the base, and barred across with dull blackish markings; fore part of the cheeks blackish; lower surface of the body blackish grey, just tinged here and there with rufous, all the shafts distinctly marked; the flanks, thighs, and under tail-coverts clearer slate-colour; under wing-coverts deep blackish grey, almost entirely black; beak horn-blue, lighter at the base; cere pale greenish yellow; feet pale lemon-yellow. Total length 15 inches, culmen 0·75, wing 11·9, tail 7·5, tarsus 1·3.

Another male, apparently adult, also only differs from the foregoing example in being a little more rufous on the abdomen.

Adult Female. Above dusky brown, strongly tinged with slate-colour, the shafts distinctly indicated; the nape strongly tinged with rufous, this colour, however, being for the most part confined to the base of the feather, and hidden by the grey of those overlapping; quills blackish grey, the secondaries more inclining to brown, the primaries externally washed with grey, the lower surface much paler, and the primaries strongly washed with grey on the under side; tail slaty grey above, more rufous underneath, very thickly crossed with alternate bands of rufous and dusky, all the rectrices tipped with fulvous; lores whitish; orbital region and ear-coverts as well as a distinct moustache black; hinder part of the cheeks and entire throat rich buff; rest of the under surface of the body buff on the upper part, gradually merging into rufous on the abdomen, all the centres of the feathers blackish, giving a striped appearance, the sides of the upper part of the breast entirely blackish; the under tail-coverts less thickly marked; the thighs deep chestnut, with longitudinal black shaft-stripes; under wing-coverts deep black, all the feathers edged with rufous; bill horn-blue, paler at the base of the lower mandible; feet greenish yellow; iris dark hazel-brown. Total length 15 inches, culmen 0·85, wing 12·9, tail 7·5, tarsus 1·4.

Male not quite adult. Like the female in the "Hobby" plumage, but more pronounced slaty grey, under surface of the body not so distinctly striped, but more obscured with dusky slaty grey; the thighs deeper chestnut; no rufous on the nape at all; the under wing-coverts blackish, with scarcely any admixture of rufous; feet orange-yellow.

A still younger male, obtained on the Cyclades by Dr. Krüper on the 25th of October, differs from the above in having the feathers on the crown and back broadly margined with light rufous, the secondaries and wing-coverts being also similarly margined; the sides of the head and underparts generally are also washed with light rufous buff, the chestnut on the thighs being replaced by that colour, and the dark markings on the underparts being very distinctly defined. In this plumage it bears considerable resemblance to the young Hobby already figured.

The present Falcon, first described by Gené from a specimen obtained by La Marmora in Sardinia, is known only to inhabit the southern countries of Europe, Palestine, Syria, North-western Africa, and Madagascar. It has in error been recorded from North-eastern Africa by Dr. von Heuglin; but later researches proved that the species referred to by that eminent naturalist was really *Falco concolor*, and not the present bird, which does not occur there. The Eleonoran Falcon has been met with in Spain by Lord Lilford, who writes as follows:—"We were returning from a drive in the pine-forest, from which we had just emerged on the

road near Valsain, when my attention was attracted by our *chico* (who was on the box) exclaiming, 'Que pajaro es aquel?' and on looking up I saw a beautiful specimen of La Marmora's Falcon (*Hypotriorchis eleonoræ*) passing us slowly at not more than ten yards' distance. This individual was in the plumage which so nearly resembles that of the Hobby, and is, I believe, that of the second year. We halted, and I had the pleasure, not unmixed with vexation, of observing for several minutes the evolutions of three of this rare species without being able to secure a specimen. All three were busily engaged in catching insects, over a marshy open spot close to the road, seizing them in their talons, and shifting them into their mouths with great ease and rapidity; they appeared totally regardless of our presence, and all repeatedly passed within a few yards of our carriage. One of these Falcons was of a uniform sooty brown; the third was apparently in the same state of plumage as the first we noticed, but not nearly so bright or distinctly marked. The extreme length of the wing of this Falcon immediately arrests the attention of any one accustomed to Hawks. This peculiarity is even more striking in La Marmora's Falcon than in the Common Hobby; and the difference in size between the two species is much more remarkable on the wing than I should have imagined. On informing Manuel of what we had seen, he told me he had often observed small Hawks near the Escorial engaged in catching insects, but never any of the *H. eleonoræ*. We revisited the spot, where we sought these Falcons several evenings in vain; we never saw them again." Major Irby informs us that he is only able to give us "the negative evidence of not having met with it anywhere, either in Andalucia or on the Moorish side of the Straits. Nor does it appear to have been noticed by Favier. The only reason I have for thinking it may sometimes occur at Gibraltar is that Latham, quoting a letter of the Rev. John White, brother of Gilbert White, who was at Gibraltar just a hundred years ago, says 'the Hobby nests on the rocks here;' what could this be but *F. eleonoræ*?" And Mr. Howard Saunders states that, "although I felt certain that I had seen a pair of this species near Seville in April 1869, I was not enabled to identify it positively until this year (1870), when on the 19th and 20th of May I found it in great abundance at the Island of Dragonera, off the west of Mallorca. This rock, for it is little more, is in appearance similar to Gibraltar, though of somewhat less elevation, being only 1180 feet from the level of the sea to the base of the lighthouse, which is perched on the summit. As the Falcons fly very high, it is not easy to obtain specimens; for, though they hawk for food over the sloping side of the rock, it would require a prolonged stay to get a shot with a chance of the bird falling on land. When sitting with my legs dangling over the precipice, a little below the highest peak, these birds passed backwards and forwards, within a few yards, as thick as Swallows on a summer's evening. They were in both the uniform sooty and also the Hobby-like plumage in about equal numbers; many of the latter, from their size, I judged to be females. One of the fishermen informed me that he had once found a clutch of three eggs, which he described correctly, and which of course he had eaten; but the majority of the nests, placed in the holes of the sheer precipice, are perfectly inaccessible, so much does the upper part overhang. The Rock-Pigeons (*Columba livia*), of which there were great numbers, did not show the slightest fear of the Falcons. The fishermen call them 'Esparver.'"

The present species has been recorded by Jaubert and Barthélemy-Lapommeraye from the South of France, but is only a rare straggler to that country, as also to the mainland of Italy.

Mr. A. B. Brooke saw a fine adult female that was killed at Coronata, near Genoa, on the 22nd of June, 1871, and is now in the Museo Civico of that city; and this gentleman, to whom we are indebted for the loan of several specimens, also observed it in Sardinia, and sends us the following notes respecting it:—"'Toro' and 'Vacca,' two barren uninhabited twin rocks rising precipitously out of the sea off the south-west corner of Sardinia, form, perhaps, the principal headquarters of these beautiful Falcons in the Mediterranean. 'Vacca' (which I visited) lies eight miles from the Sardinian coast, being two miles south of the small thinly inhabited island of S. Antioco. Its length is about a quarter of a mile, its breadth not quite so much. 'Toro' is, I believe, rather the larger island of the two, and is situated seven or eight miles further south. Owing to the extreme difficulty of landing, except during the calmest weather, these islands are seldom visited, and that only by fishermen, who occasionally land to dry their nets. Amongst the precipitous cliffs of 'Vacca,' especially those on the east side of the rock, are the favourite haunts of the Eleonora Falcons, where they pass the entire year and breed. It was early in May when I explored these cliffs; and although this Falcon is supposed not to breed until much later in the year, yet I feel almost certain that they were nesting at the time of my visit. If this be not so, I do not know how to account for the large number of birds (about twenty or twenty-five pairs) that I found continually on the rock during the day-time, persistently returning, and flying into the same holes, and that after having been fired at and *wounded*, as was the case with many individuals. The manner in which they flew in circles, screaming, over my head, exhibited a similar annoyance to that displayed by Peregrines when their nests are disturbed. I also fancied several times I heard the young birds squealing in their nests. I tried unsuccessfully to make this certain by reaching the breeding-holes, but found that it was absolutely impossible, without proper ropes and tackle necessary for such an undertaking. On the top of the cliffs I found numerous chosen places where the Falcons picked their prey previous to carrying them down to their young. The remnants consisted solely of the remains of Insessores, which must have been obtained on the opposite shores of Sardinia, as the only species observed by me on Vacca was the Common Wheatear, of which I saw a solitary pair. The stomachs of all the Eleonora Falcons examined by me contained the remains of small birds. Two old males that I obtained were in their beautiful adult, dark, slaty blue plumage. A third, a young male probably of the previous year, differed from adult females in the much darker colour of his breast, and also in the colour of his feet, which were of a decided orange-yellow, instead of the pale yellow tinged with green characteristic of the old female bird. The wings of four specimens as they lay before me in the flesh reached almost exactly level with the end of their tails, not extending beyond."

Mr. Howard Saunders when at Rome found nailed to a barn-door the dried remains of a bird of this species which, from its size, he judged to be a female; and Lord Lilford informs us that he believes he saw specimens of this Falcon off Sicily in August 1858, and on the west coast of Corfu in the summer of 1857. According to Canon Tristram, as stated in Mr. Wright's list of birds of Malta and Gozo, Colonel Drummond Hay shot one in Malta, this specimen being now in the colonel's collection. Most of the specimens which have lately found their way into collections appear to have come from the islands of Greece through that indefatigable collector Dr. Th. Krüper, whose notes on the habits and nidification of this species we translate below. Until he

found this bird on the islands near Naxos in 1862, all the available information published respecting its habits consisted of the few notes from the pens of Dr. Erhard, Lindermayer, and Count von der Mühle. Dr. Erhard described it as a new species under the name of *Falco dichrous*. Count von der Mühle speaks of it as *Falco concolor*; and Lindermayer includes in his work, the 'Birds of Greece,' published in 1860, four species, *Falco arcadicus*, Lind., *Falco concolor*, Temm., *Falco eleonoræ*, Gené, and *Falco dichrous*, Erh., all of which must be referred to the present species, which has by several authors been confounded with the true *Falco concolor*, though the latter has not been known to occur in Europe. To the eastward the present species has been found in Syria, a specimen having been, according to Gené, obtained at Beyrout; and Canon Tristram, writing on the ornithology of Palestine, says that "this bird was several times seen by us in spring, but not in winter; and a pair were found breeding in the Bukáa, near the village of Zebdany, in the beginning of June. Here, as in Algeria, it seems to be the very latest of all Raptores in its nidification." The present species does not occur in North-eastern Africa, being there replaced by a closely allied species (*Falco concolor*, Temm.); but it has been recorded from Madagascar; for Mr. John Henry Gurney, whose authority on any question relating to Raptorial birds is unimpeachable, writes as follows:—"The Norwich Museum possesses the example of a Falcon, under the name of *Falco radama*, as having been taken at sea off the east coast of Madagascar. I have the testimony of Mr. Edward Newton that this specimen closely resembles the example preserved in the Museum of St. Denis, the capital of Réunion, and described, under the name of *F. radama*, by M. Maillard in his work on that island, as having been obtained there, which testimony is also confirmed by a comparison of the description with the Norwich bird. But further comparison also shows that this last agrees completely with a specimen of *H. eleonoræ* in a similar stage of plumage from the Greek archipelago; and it therefore appears that the species last mentioned extends its range to Madagascar, and occasionally also to Réunion—a fact of which MM. Schlegel and Pollen do not seem to be aware." Messrs. Roch and Newton both met with this bird on Madagascar; and the former obtained the specimen above referred to by Mr. Gurney, respecting which the following particulars were given (Ibis, 1862, p. 266):—"On my return journey from the capital, near the summit of the Ambodinangavo mountain (the highest we crossed), a Falcon, apparently of this species, came hovering over the peak, just as I fired right and left at a brace of Quail (*Margaroperdix striata*), one of which dropped dead, the other flying over the hill-side. Instantly the Falcon, undisturbed by the report of the gun, made a stoop at the falling Quail, within thirty or forty paces of where I stood; missing the bird it flew towards the rocky cliffs on the south side of the path, when it was joined by its mate, carrying a bird. As they approached the cliffs, I could hear their young crying. I (S. R.) obtained a specimen of this bird on leaving Tamatave towards the end of November, when about fifteen miles from land; after hovering about the ship for some time it rested on the rigging, thus enabling me to shoot it. It is a young male in good plumage." As will be seen from the above, the specimen referred to is in immature plumage; and, considering how closely the young of the present species and of *Falco concolor* resemble each other, we think it not impossible that future research may prove that this latter only, and not *Falco eleonoræ*, is the bird found in Madagascar. This present species is found in Algeria; and the bird referred to by Captain Loche under the name of *Hypotriorchis concolor* is most probably this bird in the

dark stage of plumage. Mr. Osbert Salvin met with the true *Falco eleonoræ* on the Eastern Atlas, and writes that "on two successive mornings I had the gratification of observing this species. We were encamped on the banks of the Chemora, on the south side of the hills that skirt the southern shore of Lake Djendeli. On the 27th of May I had been out to collect specimens of the Alpine Swift (*Cypselus melba*), many of which I had seen flying over the plain, and was returning to breakfast, when one of four Hawks which I had previously been watching with some curiosity (not knowing what they were) came over my head, and fell to a discharge of dust-shot. It proved to be a splendid female of *H. eleonoræ*, in full adult dress. The following morning I saw one about the same spot, but failed to get a shot. It would appear that this bird is a late breeder, as the eggs in the ovary were not at all forward, and the perfect state of the feathers showed that no eggs had been incubated. The plumage of this specimen retained, for some time, a peculiar smell, possibly owing to the nature of its food, which, though I neglected to examine at the time, I conjecture to have consisted principally of coleoptera. Of the colouring of the fleshy parts of this specimen I have the following note:—Bill blue at the base, black at the tip; cere yellowish blue; legs yellow; claws black; eyelid yellow; irides dark brown."

The Eleonoran Falcon might, from its habits, be justly be called the Rock-Hobby; for it frequents the barren rocky islands, depositing its eggs on the ground amongst the stones, and never nesting in a tree. Dr. Krüper, during his stay on Naxos and the adjoining islands, carefully collected all possible information respecting this Falcon, and published the result of his investigations in 1864 (Cab. Journ. 1864, pp. 1–24) *in extenso*. The length of this article precludes us from inserting a full translation of it; but we have extracted from it the following notes:—"On my entomological expeditions, undertaken in the month of April, from the town of Naxos, I but seldom observed this Falcon, and on the 25th of that month I saw the first small flock flying above Tragæa. . . . . On the 6th of August I visited the islands where these Falcons breed, and landed first on Guiduronisi (Donkey-island), which is the largest of them. This island is about a quarter of a German mile in extent, and has very steep shores, with a landing-place sheltered from the north wind, the highest point on the island being about 300 feet above the sea. We had hunted over about half the island without seeing a Falcon; but when we reached the most northern point a Falcon flew up about twenty-five paces in advance of me off some stony ground; and hurrying to the place, I found a nest containing two eggs. A little distance further on another bird flew up, and I again found two fresh eggs." Dr. Krüper further goes on to record the finding of several more nests on the small islands, on one of which (on the 22nd of August) he caught the old female on her eggs. He continues:—"It does not build a regular nest of twigs, but deposits its eggs on the bare ground in the sand, without any thing in the way of a nest under them. Only in one instance did I find a slight nest under them; but it was merely an old Gull's nest which had been utilized. The eggs are generally placed under a small or large stone, so as to be sheltered from the rain; sometimes one finds them concealed far under a rock, and I found this the case on several islands; often, however, they were not thus protected. There are two sorts of breeding-places—islands having steep cliffs, and those that rise gradually out of the sea. Tragonisi and Stapodia belong to the former; and there the Falcons breed in security in the holes and precipices. In other islands where the shores are only steep in places, the Falcons do not seem to affect those parts, but generally deposit their

eggs on the top amongst the stones. It does not breed all over the island, but generally near the shore, about thirty to forty paces from parts washed by the sea. If the bird uses the same nesting-spot annually I cannot say; but I believe that suitable places are annually inhabited. The number of eggs generally is two or three; and I have never yet found four or five. According to my experience I found as often three as two eggs. When three eggs were in the nest I often found only two fertile, and have only found one fertile in some cases where two were deposited. On the 6th of October my servant found an egg by the side of a young bird about fourteen days old, and on the 7th of October again one egg in a nest which the young birds had left. Dr. Erhard considered his *F. dichrous* a resident, but does not give his reasons. On the other hand he considers *F. eleonoræ* to be a summer resident. Up to the end of September I looked on *F. eleonoræ* as a resident on the Cyclades—that is, that it spent the winter there, as I was assured by several hunters was the case. At the monastery of Myconos, where the Eleonoran Falcon was well known, I was assured that it migrates away, as it was never seen in the winter. I cannot say which of these two statements is correct; but my opinion is that the Falcon, with its young, spread themselves about the larger islands and on the coasts of the mainland of Greece, and are therefore less seldom seen. As it is a frequenter of the sea, I do not think that it leaves the sea and undertakes long journeys into Asia and Africa. On the coast of Asia Minor examples have lately been procured; but, on the other hand, it has not been recorded from Egypt. On Naxos, which, during the winter, is visited by numbers of sea-birds, no Falcons remain. On Myconos, where the cliffs are very steep, and consequently few sea-birds are found, there are also but few Falcons.

"All the summer I believed that the Eleonoran Falcons remained about the islands where they breed, and thence undertook daily wanderings. When on Myconos I ascertained from the herdsmen who lived all the year round on Tragonisi, that the Falcons appear on the island in April, and in October (when the young can fly) leave again. That the latter is the case I myself ascertained when on Tragonisi, from the 2nd to the 12th of October, as they greatly diminished in numbers.

"The voice of the Eleonoran Falcon much resembles that of the Peregrine, but is much weaker. In the breeding-season, when uttered in play, it sounds like *kek kek*. The alarm-note is a call of three syllables, like *wek wek wek*, the emphasis being equally laid on each of the three syllables, or chiefly on the second. When calling to its mate, it calls twice *wek wek*, the latter being deepest; and when quarrelling I have heard them utter these notes as loud as if they were uttered by Parrots.

"With regard to the food of the Eleonoran Falcon, it consists chiefly of birds caught by the Falcon and placed unplucked before the young. I cannot give a full list of the birds on which it feeds, as, owing to the heavy storms, I was prevented from visiting the breeding-places at the proper season. Near the nests I found remains of the following birds, viz.:—*Oriolus galbula*, *Upupa epops*, *Perdix coturnix*, *Columba livia*, *Lanius collurio*, *Muscicapa grisola*, and others that I could not make out.

"As the Eleonoran Falcon is a noble Falcon, and in early ages was used for falconry, I thought that it lived entirely on birds, and was therefore surprised to find, during the breeding-season, castings containing remains of beetles near the nests. I supposed that these belonged to

the birds the Falcons had killed; and I found, later on, similar castings near young birds scarcely a fortnight old. In October only did I ascertain the true state of affairs. My servant brought me word to Tragonisi that in following a young Falcon he had climbed up a precipice and found there a nest-hole in which were remains of grasshoppers and a lizard occurring on Myconos, the so-called thorn-lizard (*Stellio vulgaris*), called, from its resemblance to the crocodile, by the Greeks κροκόδειλος. Although I to a certain extent believed his statement, still I was not satisfied, as he produced no proof. On the following day he found another deserted nest containing similar remains, of which he brought me the entire tail of the so-called crocodile lizard, and the elytra of a large water-beetle (*Hydrophilus piceus*). In the stomachs of all the Falcons I examined I found only remains of birds; and it therefore seems as if they only seldom feed on insects or amphibious animals. I have never observed them hovering in the air and picking up their prey from the ground like the Red-footed Falcon."

The Eleonoran Falcon is not so very unfrequently kept in captivity. Mr. Osbert Salvin saw three young birds in the Zoological Gardens at Marseilles; and Lord Lilford, who has kept this bird alive, writes to us as follows:—"I heard from Castang, of Leadenhall Market, in October 1868, that he had some Barbary Falcons alive, and telegraphed to him to send two down to me to Invernesshire, where I then was. The birds arrived safely, and turned out to be two nestlings of the present species, with the down still appearing in patches through their young feathers. I subsequently bought two more of the same venture. One bird only of these four survived the winter of 1868–1869; and a more charmingly docile Hawk I never saw. She used to fly at large about the place, and would come immediately to a call or whistle, and stoop at the lure, but was shy at coming to the fist, a peculiarity that I have often noticed in training the Common Hobby (*F. subbuteo*). This bird was eventually chased and driven quite out of sight by some Rooks, and we never saw her again. I am sorry that my best specimens of this species are stuffed and mounted, so that I cannot send them to you for examination. The young birds above alluded to were brought from Mogador to London, having been taken from the nests in sea-cliffs near that town."

The egg of the Eleonoran Falcon bears considerable resemblance to that of the Hobby, but is somewhat larger in size. We have now before us six eggs of this species from Dresser's collection, all obtained by Dr. Krüper on the islands near Naxos. None of these eggs bears the least resemblance to the pale washed-out variety figured by Dr. Bree from Thienemann's figure of the egg of this bird, but are, as a rule, quite as richly coloured as the eggs of the Hobby. The ground-colour of these eggs is pale greyish buff or stone; and the markings, which are spots or blotches of rufous, are sometimes distributed over the entire surface of the egg, or else collected at one end; one specimen is very richly blotched at one end, the other being almost unspotted. In size these eggs vary from $1\frac{33}{40}$ by $1\frac{15}{40}$ inch to $1\frac{27}{40}$ by $1\frac{13}{40}$ inch. Our friend Dr. E. Rey gives the average size of forty eggs as 41·7 by 33·2, the largest measuring 44·25 by 32·5, and the smallest 38·75 by 31·0 millimetres respectively.

The adult male in the grey plumage described and figured by us, is one of the finest we have ever seen, and was shot by Mr. A. B. Brooke himself on the island of Vacca, off the south-west coast of Sardinia. The adult female in the "Hobby" plumage, of which we have given a description and figure, is also in Mr. Brooke's collection, and was obtained by him on the same

occasion. The young male described is also one of his specimens; and the younger male was sent to us by our friend Dr. Th. Krüper, and is now in Dresser's collection.

In the preparation of the above article we have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂. Island of Vacca, Sardinia, May 5th, 1871 (*A. B. Brooke*). *b*, *c*, ♂ *ad.* Cyclades, September 24th; *d*, ♀ *ad.* August 20th, 1863; *e*, ♀ *ad.* August 25th, 1864; *f*, ♀ *ad.* August 19th, 1864; *g*, ♂ *juv.* October 25th, 1864 (*Dr. Th. Krüper*).

E Mus. A. B. Brooke.

a, *b*, *c*, ♂, ♀, ♂ *juv.* Island of Vacca, Sardinia, May 5th, 1871 (*A. B. B.*).

E Mus. Lord Lilford.

a, *b*, ♂ *juv.*; *c*, ♀ *ad.*; *d*, ♀ *juv.* Tragonisi, Cyclades, October 1862 (*Dr. Th. Krüper*). *e*, ♀ *juv.* Mogador (*Castang*).

E. Mus. Howard Saunders.

a, *b*, ♂, *c*, ♀. Cyclades, August 1864 (*Dr. Th. Krüper*).



FALCO TINNUNCULUS .

XII

FALCO TINNUNCULUS.

(COMMON KESTREL.)

Falco tinnunculus, Linn. Syst. Nat. i. p. 127 (1766).
Cerchneis tinnuncula, Boie, Isis, 1828, p. 314.
Ægypius tinnunculus, Kaup, Natürl. Syst. p. 29 (1829).
Falco fasciatus, Retz. Faun. Suec. p. 70 (1800).
Falco brunneus, Bechst. Ornith. Taschenb. p. 38 (1802).
Cerchneis murum, Brehm, Vög. Deutschl. p. 70 (1831).
Cerchneis media, Brehm, Vög. Deutschl. p. 72 (1831).
Falco rufescens, Swains. B. of W. Afr. i. p. 109 (1837).
Falco interstinctus, Maclell. P. Z. S. 1839, p. 154.
Tinnunculus alaudarius, Gray, Gen. of B. i. p. 3 (1840).

Faucon-cresserelle, French; *Thurm-Falke*, German; *Taarnfalk*, Danish; *Tornfalk*, Swedish; *Taarnfalk*, Norwegian; *Cernicalo*, Spanish; *Francelho*, or *Peneireiro*, Portuguese; *Gheppio*, Italian.

♂. capite pulchre cinereo, plumis medialiter nigro striolatis: fronte et linea angusta superciliari albicante; genis argenteo-cinereis: striga mystacali ab oculo anteriore orta nigricanti-cinerea: gutture et colli lateribus fulvescenti-albidis: dorso rufo, ubique maculis nigris triangularibus notato: dorso imo cum uropygio et supracaudalibus clare cinereis, scapis obsolete notatis: tectricibus alarum superioribus dorso concoloribus: remigibus nigricantibus fulvescente marginatis, pogonio interno transverse albo fasciato, secundariis rufis dorso concoloribus: cauda cinerea versus apicem nigro late transfasciata, fulvescente terminata: corpore subtus rufescente, pectore superiore nigro longitudinaliter striato, hypochondriis maculis pyriformibus nigris notatis: abdomine medio cum subcaudalibus pallide rufescentibus immaculatis: cruribus dilute castaneis, immaculatis: subalaribus albis nigro variis: rostro plumbescenti-corneo, ad basin flavicante: pedibus flavis.

♀. rufa, nigro late transfasciata, secundariis albicante terminatis: capite nigro longitudinaliter striato: genis albicantibus: subtus rufescens, nigro medialiter variegata: gutture cum cruribus et abdomine imo fulvescentibus, fere immaculatis: cauda rufa nigricante transfasciata, versus apicem latius, apice fulvescente: rostro et pedibus ut in mari coloratis.

Adult Male. Head clear blue-grey, the feathers mesially streaked with narrow black shaft-stripes, these being broader on the nape; forehead and eyebrow whitish; cheeks silvery grey; a distinct moustache from the front of the eye blackish grey; sides of the neck fulvescent, with narrow little streaks; back, scapularies, and wing-coverts rufous, marked with triangular black spots near the apex of the feather, some of these spots being larger than others; quills blackish, margined with dirty white, the inner web transversely barred with whitish; the secondaries rufous, like the back, the outer ones varied with black bars, the inner ones almost entirely rufous, with a black triangular spot near the tip; lower part of the back, rump, and upper tail-coverts clear blue-grey; tail blue-grey, with a broad black band

running across the end, the tips of the feathers fulvous; throat fulvous, unspotted; under surface of the body dull rufous, the upper part of the breast streaked with narrow lines of black, the sides of the body marked with larger pear-shaped spots; lower part of the belly and under tail-feathers fulvescent; thighs pale chestnut; under wing-coverts white, with a few irregular black spots; bill yellow at base, black at tip, bright blue in the middle; cere and orbital region yellow; feet yellow; iris brown. Total length 14 inches, culmen 0·7, wing 8·4, tail 7·0, tarsus 1·3.

Adult Female. General colour above rufous, transversely banded with broad bars of black, the secondaries tipped with whitish; head longitudinally striped with black; tail rufous, banded with black, the bars nearest the extremity of the tail being broadest, the tips of the feathers fulvescent; chin and abdomen pale fulvous; breast dull rufous, longitudinally striped with black; the flanks indistinctly banded; bill and feet as in male.

Young Male. Resembling generally the old female, but somewhat lighter in colour. The first signs of adolescence appear on the upper tail-coverts, which become bluish grey; and afterwards the tail itself gets gradually grey, the black bars by degrees disappearing, while the blue head is the last to be donned. We have seen a specimen shot in December which had the blue tail of the male, but still preserved the rufous head of the female, while examples killed as late as May still have slight remains of black bars on the tail, and a dash of rufous on the head.

The Common Kestrel ranges over the entire Palæarctic Region, being found throughout Europe and Siberia, visiting India in the winter, and also migrating, but apparently in more limited numbers, to Africa. In some southern latitudes, however, where the Kestrel is a resident species, the bird assumes a dark phase of coloration, and thus is represented by several local races. Professor Schlegel, in his Catalogue of the Leiden Museum, has drawn attention to these varied forms, and enumerates under the heading of the ordinary species examples from all parts of Europe, Africa, and Ceylon; specimens from Nepal, he finds, are rather darker in tint, and in those from Japan and Northern China he remarks that the colours are still more deep, and the black stripes on the head of the old male much more pronounced. These latter are the birds figured in the 'Fauna Japonica' as *Tinnunculus alaudarius*, var. *japonicus*. In specimens from Southern China, Professor Schlegel observes that the size appears to be a little smaller, and the coloration even darker than in the Kestrel of Japan.

The learned professor, who is one of the first authorities on Falcons, is no doubt right in assigning to these dark-coloured Kestrels subspecific rank only, as even within the limits of the Western Palæarctic Region one of these races is met with. In Madeira the Kestrels are much darker; and we are indebted to our friend Mr. J. A. Harvie-Brown for a specimen shot in that island by Mr. A. J. Grant in November 1862. Compared with English female Kestrels the bird in question is not only darker in all its tints, which incline to very deep rufous on all parts of the body, but also in having the cross bands on the tail much broader, while at the same time the centre tail-feathers are strongly washed with blue. A female specimen from Abyssinia exactly agrees with the Madeira skin; and a male specimen from the same country, in Lord Walden's collection, is much darker than European specimens. This curious difference in the resident Kestrel of North-eastern Africa has not been overlooked by Dr. von Heuglin, who also remarks the broader bands on the tail. Professor Sundevall has likewise drawn attention to this dark race, but says that the general style of plumage agrees with that of the European bird,

apparently overlooking the difference in the barring of the tail-feathers. This dark-coloured race is doubtless the bird called by Rüppell *Tinnunculus rupicolus*, and alluded to by Bonaparte as "*Tinnunculus rupicolæ-formis*, Würtemberg," a name apparently never published and not alluded to in Dr. von Heuglin's recently published work on the Ornithology of North-eastern Africa.

Besides all the examples we have examined in collections of European birds in this country, we have also seen a large number of Indian specimens in Lord Walden's collection, and we are further indebted to Mr. R. Swinhoe for the loan of a beautiful series of Kestrels from China. We have critically examined all these specimens, and we believe that the Kestrel of China is the same as the Japanese Kestrel, called by authors *Tinnunculus japonicus*. We cannot, however, consider this eastern bird to be specifically distinct from the Common Kestrel of Europe, although we confess that the dark-coloured individuals at first sight look very different. But in the series which Mr. Swinhoe has placed before us all shades of colour are represented, from very light fawn to very dark rufous. Neither can we satisfactorily account for these changes; for specimens of both light and dark forms occur at Amoy in the same month of the year. We notice, however, that the majority of the pale-coloured individuals were obtained in the months of October and April, while most of the dark-coloured specimens were procured between November and February; so that the light-coloured race may be the resident Kestrel, and the dark-coloured race the winter visitant, which would be exactly the contrary to what obtains in Europe and the Western Palæarctic Region generally. The tail in most of the dark rufous specimens from Japan and China is washed with blue, as in the Madeiran and Abyssinian races; but the breadth of the bars on the rectrices varies *ad infinitum*, and in the eastern races, at least, does not seem to be a character of any great importance.

In a series of specimens which Lord Walden was kind enough to submit to us from India, Ceylon, and Burmah, we noticed many very pale-coloured specimens along with other individuals which it would have been impossible to distinguish from British-killed Kestrels, so that there can be no doubt that the European bird goes into India; and it also probably occurs in Northern China; but at present we believe that it is the dark Japanese form which takes its place in Southern China, and thence northward to Japan.

The present species is a common bird in Great Britain, breeding everywhere. It is to a certain extent migratory, as noticed by Waterton; and Mr. Hepburn, in a note contributed to Macgillivray's 'British Birds,' says so also. Macgillivray himself considers that in the districts bordering the Firth of Forth they are as numerous, if not more so, in winter than in summer, and that probably, "like the Merlin, this species merely migrates from the interior to the coast." In the north of Ireland Thompson considers them to be quite as numerous in winter as in summer in their usual haunts.

Mr. Stevenson in the 'Birds of Norfolk' says:—

"Migratory specimens from the north also appear on our coast in considerable numbers towards the end of autumn, when many are trapped and shot on the hills by the sea-side, particularly about Northrepps and Beestar, near Cromer. It is probable, I think, that some of our native birds proceed further south during severe weather; and I believe, as a rule, like our common Song Thrush, they quit altogether the more exposed parts of the country in the depth

of winter. In more sheltered localities, however, they are observed at all seasons. A pair which regularly frequent the ruined steeple of Keswick church, near Norwich, have been seen, by my friend Mr. Edwards, skimming over the fields in search of prey whilst the snow was lying deep; and the thrashing out of a stack in autumn or winter is sure to bring them at once to the spot to seize, at a respectful distance, on the mice thus expelled from their snug quarters."

Nilsson writes:—

"In Southern Sweden it is one of our commonest birds of prey, as it is one of the handsomest. It is found, however, more in the southern than the northern part of our peninsula. In the north it is scarce, and more so as one approaches the polar circle, within which it seldom penetrates. Still it is found far to the north, and is not rare at Trondhjem, and at Tarroch, on the Bindelsfiord, on the borders of Helgeland, where it inhabits the high cliffs. I have also found it inhabiting the fells of Western Norway, far above the tree-growth, and nearly at an altitude where the snow always lies. Here it inhabits high steep cliffs."

Mr. Wolley's collection contained four eggs of the Kestrel taken at Petaja-vaara, Kemi Lappmark, about lat. 68° N., in May 1857. The people who obtained these did not know the bird; so that it appears to be a rare bird in Lapland. In recording the above fact in his 'Ootheca Wolleyana,' Professor Newton adds the following editorial note:—"Mr. Wolley suggests that 'the unusual numbers of several kinds of mice' had attracted this species so far beyond its usual limits. Previously to 1857, he was aware of only one instance of its occurrence north of the Gulf of Bothnia. That happened on the 13th of September, 1855, when he and I were approaching Haparanda, on the Swedish side of the Torneå river. We then saw, and for some minutes watched, an undoubted *Tinnunculus alaudarius* hovering over a corn-field by the road-side. Its occasional breeding further north was, however, known to Herr Wallengren (Naumannia, 1855, p. 134)."

Von Wright states that it is one of the commonest Hawks in Finland; and Mayer says it is common all over Livonia, as also in Denmark, according to Kjærbölling. It is likewise abundant throughout Holland and the Netherlands. De Selys-Longchamps records it as everywhere common in Belgium, inhabiting equally woods, plains, rocks, or old towers, and is one of the greatest enemies of Pigeons. De la Fontaine, commenting on the above statement, says that he has never noticed the fact, as his experience is that the Pigeons and Kestrels live and nest together in the same walls in perfect harmony. All over Germany, as well as throughout France, Spain, Portugal, Italy, and Sardinia, the Kestrel is a very common bird.

With regard to its occurrence in Spain, Mr. Howard Saunders kindly sends us the accompanying note:—

"*Tinnunculus alaudarius* is called in Spanish 'Cernicalo' and 'Primilla.' It is very abundant throughout Spain, great numbers frequenting the wooded districts, where they nest in the trees, often appropriating old Magpies' nests; but in many cases they evidently make their own. In the mountain-ravines, where they deposit their eggs in holes of the rocks, they are extremely numerous; but their numbers are particularly displayed in such cities as Seville and Cordova, where many hundreds may be seen towards sunset hovering round the towers of the Giralda and the Mezquita, the belfries being whitened with their excrement and paved with their castings, which principally, indeed almost entirely, consist of remains of insects. In the

day they may be seen by three or four hundred at a time, now hanging motionless over the plains near Seville (as the Ettrick Shepherd said of the Merlin,

> As if let down from the heaven there
> By a viewless silken thread),

now dipping down for a moment upon some beetle on the ground. I am at present speaking of the winter months, when the main arrival of the Lesser Kestrel (*F. cenchris*) has not taken place, as the latter bird does not generally come till March, though some undoubtedly do remain all the time. I fancy that the two species interbreed, or that there is an intermediate race, as on the 16th May I took a white-clawed female off her nest in the Cathedral of Seville, whose eggs were typical eggs of *T. alaudarius*, of the largest description, quite unlike any that I have ever seen of *F. cenchris*, which, moreover, had scarcely begun to lay, whereas these eggs were very much incubated. In length of wing and other dimensions this female is decidedly larger than the female *F. cenchris*, and is barely, if any, smaller than average *F. tinnunculus* (female) from other localities. I may add that in many birds resident in Spain there is a tendency to run smaller in size and brighter in colour than more northern specimens."

Mr. Tyrwhitt Drake considers it to be a very common bird in Tangier and Eastern Morocco; and it is found in Tripoli, as recorded by the late Mr. W. T. H. Chambers. In Algeria Loche says it is plentiful; and Mr. Salvin states that it is very abundant throughout the Eastern Atlas.

In the Sahara, Dr. Tristram observes:—

"The Kestrel resorts to every part of the country, except the plains. In the oases he preys on the Palm-rat, which nestles in the crown of the date-trees, or he pursues the large beetles at dusk through the gardens. In the ravines he finds abundance of Marmots (gundi); and in the dayats I have often watched him pouncing upon the Jerboas as they leave their holes."

In South-eastern Europe the present species is everywhere distributed. Lindermayer says it is a resident in Greece, but much less numerous in the winter. Lord Lilford, however, found it not common in Epirus and Corfu during his residence in those countries.

Mr. C. Farman says:—

"Throughout the whole country lying between the Black Sea and the Danube the Kestrel is abundant, and is in fact the commonest of all the birds of prey. It seems to have no partiality for any particular spot, it being equally abundant on the shores of the two lakes of Devna, the Pravidy valley, the moorlands about Shitangick, and the forest country to the east of Rodgrad."

Respecting the occurrence and habits of this bird in Turkey, Mr. T. Robson writes us as follows:—

"This species is numerous in Turkey in Europe and Asia Minor, and particularly so during the spring and autumn migrations. In spring they arrive and pass in small flocks, and during the winter are not so numerous as at other seasons of the year. During the summer they are widely distributed throughout Turkey, and are partial to towers, aqueducts, and large reservoirs for nesting-places; but they also build in holes in the walls of houses in villages and populous towns, as also under the eaves of farm-buildings in the country. The cup-shaped base of the large branches of the oriental plane trees often also affords them a secure and unnoticed nesting-place.

"In localities where a few isolated trees are left standing on mountain-sides or plains to afford shelter from the midday sun to the flocks, the Kestrel also takes possession of the deserted nest of a Crow, Hawk, or other bird, where it rears its progeny unmolested amidst the bleating of the sheep and the barking of dogs &c. In the foundation of these nests occupied by Kestrels the Spanish Sparrow often builds, and rears its brood in perfect security, undisturbed by the Hawks. In this country the Kestrel feeds chiefly on beetles and locusts, but also on mice and small lizards; they hover over and stoop to locusts and beetles as they do to mice.

"In the autumn young birds of the year are often taken on limed twigs by the bird-catchers, as they attack the birds caught on the twigs, and, becoming entangled, are easily taken. The tail of the old female assumes, I have observed, the colour of that of the male. They are given to resting on telegraph-posts and wires, and as many as twenty-four have been counted sitting a little apart from each other at one place.

"In the autumn and winter they roost at night principally on the ledges and crevices of rocks, and during the day may often be observed sitting on mounds of earth, and detached pieces of rock which are scattered about the country, on the look-out for beetles &c.

"With us in Turkey this species is more numerous than any of the Falcon tribe, and is constantly resident in the country."

In Southern Russia Professor von Nordmann states that it is very common all over the country, as well in the towns and villages as on the plains and steppes. It generally migrates on the approach of winter; but when the cold is not severe, many remain. Eversmann observed it in March in Bokhara.

How far to the eastward the range of the true *Falco tinnunculus* extends we are unhappily in doubt, as in the case of so many of the Western Palæarctic birds. On this point we can only give the evidence *verbatim* of the Russian travellers. Pallas says that it is found throughout the whole of Russia and Siberia, but appreciably diminishing in numbers towards the eastern part of the latter country. From the middle of August, as soon as the young are reared, they abound in the bare southern deserts, and in Tauria even to the middle of September, when they fly southward. In Astrachan they are looked upon as the heralds of autumn.

Dr. von Schrenck (Amur-Reise, p. 233) writes as follows:—

"Undoubtedly the Kestrel is found at the head-springs of the Amoor river, as also on the Lower Amoor. On the rocky shore of the Lower Ussuri, near Dschoada, I saw on the 16th of August a bird which I consider must have been a Kestrel. This seems to show that the Kestrel extends further eastward in Siberia than Pallas supposed; indeed it probably occurs up to the east coast of the continent and the islands, as Siebold found it in Japan."

Dr. G. Radde has more recently recorded the following notes:—

"The Kestrel is much rarer in East Siberia than the other small Hawks, but has been found there by the later travellers. On my journey to East Siberia I found it common as far as Omsk, but eastward of that only occasional. During the migration I saw them in the Selenga valley, near the Gusinoi Lake, early in September, and late in March near the Onon, between Sasutsche and the new fortress of Tschindantsk, and in July 1859 in the high mountains as I passed from the Oka to the Irkut, and had to pass over heights above the tree-region (7000 ft.). I did not see

it in the Central Amoor; but it is doubtless found here, as Schrenck observed it on the Ussuri, and Dr. Maack brought it from the headwaters of the Amoor."

We believe that the observations of Pallas regarding the range of the Kestrel are correct, as borne out to a great extent by Radde. The Amoor bird must certainly be the same as the Japanese dark race, and therefore is not the true *F. tinnunculus*. We believe also that the birds observed by Radde in the Baikal region belonged also to the Japanese form.

The Kestrel appears to be still an unsettled species, and has doubtless been at one time a thorough migrant from Europe. In the East it still follows its migratory instincts, but in the west of Europe has become more or less sedentary. The great gatherings above alluded to by Pallas seem to point to the southern deserts of Siberia and Central Asia as the place whence the southward migration of the Kestrel still emanates in full force; and from that point the line of flight seems to take a southerly direction. Part of the migration populates India in the cold season, and part proceeds in the direction of North-eastern Africa, as we shall presently see.

Major Irby has stated that in Oudh and Kumaon it is common during the cold season, and occasionally seen during the rains; and Dr. Jerdon, in his 'Birds of India,' writes as follows:—

"The Kestrel is a cold-weather visitant to India, one of our earliest, indeed, and it does not leave till April. It is most abundant, being found in every part of the country, and at all elevations. Its chief food is lizards; but it also eats rats and mice, insects, especially grasshoppers and locusts, and rarely young or sickly birds. It constantly hovers over a spot where it has observed something move, and, when certain of its presence, drops down on it with noiseless wing. Blyth mentions that parties of twenty or thirty individuals may be seen together beating over the cultivated lands in Lower Bengal. This I have never witnessed. It does not breed in this country. Dr. Horsfield, in his 'Catalogue,' apparently quoting from Mr. Blyth, says, 'It breeds in April in lofty trees, and also on the top of minarets.' I imagine he must have been quoting from some other naturalist, not an observer in India. It used to be trained occasionally in Europe to hunt Larks, Quails, and other small birds; but it is scouted by the Indian falconers as an ignoble race."

Following the line of migration in a south-westerly direction, we find that the Kestrel was obtained in Mesopotamia by Commander Jones, and at Trebizond by Mr. Keith Abbott. The late Mr. Strickland has recorded it as rare near Smyrna. Mr. Gurney has received it from Beyrout, in Syria. In Palestine it appears to be sedentary; but the line of migration must sometimes, if not always, traverse this country. The following are Dr. Tristram's observations on the bird as observed by him in the latter country:—

"The Kestrel is excessively common in every part of the country throughout the year, up to the confines of the southern desert. In the Ghor, and in the eastern forests among the ruins of Amman and Gerash, in the desolate gorges of the Dead Sea, among the luxuriant gardens of the coast, and in the sacred recesses of the mosques of Omar and Hebron it equally abounds. It is generally gregarious, ten or twenty pairs breeding in the same ruins, and rearing their young about the end of March. It often builds its nest in the recesses of the caves which are occupied by the Griffons, and is the only bird which the Eagles appear to permit to live in close proximity to them. At Amman, too, it builds in the ruins in company with the Jackdaws; and in several places, as at Lydda and Nazareth, large colonies are mixed indiscriminately with those of the

following species (*Tinnunculus cenchris*). The number of nests we came across, without searching for them, was enormous."

With regard to its occurrence in North-eastern Africa, Captain Shelley considers it to be "by far the most abundant Hawk in Egypt. On one occasion," he adds, "we saw at least a hundred in a single group of palm-trees, attracted there, no doubt, by the locusts which were passing in dense continuous clouds beneath them. These flights of locusts spread this year (1870) throughout the country, clearing whole districts of every green crop as they passed."

The following notes have been published by Dr. von Heuglin:—

"In the northern portion of this country the Kestrel is sedentary, and breeds in spring (between March and May) in ruins and rocks. In September and October they increase considerably in numbers through the advent of migrants, which spread over Arabia, Nubia, Abyssinia, and Eastern Sudan, and return early in the end of the winter. In Africa they feed chiefly on grasshoppers, which in autumn and winter swarm all over the place; and then the Kestrels may be seen singly, or in flocks, often, indeed, in large companies, hovering on the steppes. They also collect round the steppe-fires, where orthoptera, scared up by the flames, become an easy prey to birds of prey, Bee-eaters, Rollers, Storks, &c.

"The Kestrel which is sedentary in North-east Africa, is generally brighter-coloured than the European bird, and has larger and blacker spots on the back, breast, and belly. The female has the head darker reddish grey, and the band on the tail appears to be broader."

Mr. Blanford, during the recent Abyssinian expedition, found it "common both in the highlands and lowlands in the winter and spring. The bird abounded on the former as late as April. None were observed in the Anseba valley in July and August."

The Kestrel likewise occurs in Western Africa having been received from Senegambia, and more recently sent from Fantee by Dr. Hinde, as recorded by Sharpe in his essays on the Ornithology of the Fantee country. The last collection sent by the late Mr. Andersson from Damaraland contained a single skin of the Common Kestrel; so that it would appear to be by no means so southern a migrant as the Lesser Kestrel or Red-footed Falcon, though doubtless a few individuals join the immense flocks of the latter birds which visit Southern Africa in the winter.

In the Azores the Kestrel is resident, and, curiously enough, does not vary like the Madeira bird. Mr. J. G. Keulemans, who resided for some time in the above-mentioned island, has favoured us with the following note:—

"The Kestrel is very common on all the Cape-Verde Islands, and it may be seen on the sea-shore as well as near the houses in the interior. I have often seen it on the tops of the mountains, at a height of more than 5000 feet. It is a resident species, and I often received the young birds. Its principal food is mice, grasshoppers, and beetles. In some localities, like the plantations along the rivers of the island of St. Jago, many individuals are seen together, and they are there generally very tame, while on the mountains of the other islands they seem to be wild and shy. Though residing in a dry, mountainous, and sandy locality, there is not the slightest difference in the colours between them and the Kestrel of Europe. The inhabitants of the different islands call it *Zebellinha*; but on St. Jago the name is *Falconha* and *Francelho*. The natives of all the islands eat the bird and much relish the flesh of the young."

In the Azores it is only an occasional visitant. Mr. Godman has kindly lent us the only specimen he has received from those islands; and we find it to be identical with the British bird.

Of all the Hawks this is the one with which we are most familiar. What dweller in the country but knows the Kestrel, and has watched him poised aloft on quivering wing, scanning with eager eye the ground beneath, until his prey is spied and secured by his downward swoop? Were it not for the mistaken ignorance of the farmer and gamekeeper, this pretty Falcon would be far more common; and it is small credit to the farmer to allow this useful bird to be slaughtered by day, and its coadjutor, the Barn Owl, by night, both of them subsisting on the field-mice and other small animals most injurious to his interests. The Kestrel is one of the last Falcons to disappear as the country becomes cultivated, and may be seen almost anywhere, more abundantly perhaps near cultivated ground than on the moors or barren heaths, carefully quartering the ground in search of prey, now hovering in the air and scrutinizing a particular spot, now sailing at a great altitude above the ground, and every now and then pouncing down on its prey, which if it fails to secure, it recommences its search with unwearied assiduity. Its food consists chiefly of field-mice, large insects, which it seizes and devours on the wing, grasshoppers, frogs, young or small birds; and it rarely, if ever, attacks any thing larger than a Lark. Mr. J. H. Gurney, jun., informs us that a Kestrel was once seen engaged in eating a Hooded Crow, the largest game we have ever heard of this bird devouring. It does not, so far as we can ascertain (except on rare occasions), ever prey on young Partridges, though Mr. Stevenson, in his 'Birds of Norfolk,' states:—"That some Kestrels carry off young Partridges as well as other small birdsduring the nesting-season is too well authenticated as a fact for even their warmest advocates to gainsay; yet still the amount of good which the species generally effects throughout the year by destroying large quantities of mice, moles, insects and worms, should entitle it rather to protection at the hands of the farmer than annihilation for occasional raids upon the keeper's preserves." On the other hand, Naumann says, "It seldom gets hold of young Partridges, as the watchful mother protects them at the risk of her own life." There is no doubt strict truth in the statements of both the above-mentioned ornithologists; but we think that the capture of young game by the Kestrel is only occasional, and that the bird only does this when other food is scarce, or, more probably, when hard driven to find food for its own young; for it will be remembered that at the time the Kestrel breeds there must be a less quantity of mice to be captured, on account of the long grass and corn. It is generally in the stubble-fields that the Kestrel finds an abundance of food; and the bird may often be seen in the twilight, standing out in bold relief against the sky, as it hovers in the fields of sheaved corn, from which the harvestmen have just retired. The Kestrel is more active in the early morning and at dusk than in the daytime. During the heat of the day it is not much seen, but keeps to the thick woods, sometimes soaring above them and wheeling in circles. Occasionally four or five may be thus observed at once in the large woods.

Ancient ruins near cultivated places, or, in the wilder countries, rocky localities are the favourite haunts of the Kestrel. In large towns where old churches or cathedrals are found, there also these Falcons congregate, and breed in large numbers in the belfries and towers; in countries where the Lesser Kestrel is found, the two species frequent the same localities. It nests in holes of ruins and in church-towers, or under the eaves of old buildings, in holes and clefts of

rocks, and in hollow trees, sometimes also in deserted nests of the Crow or Magpie. In England it more frequently chooses the nest of another bird; but Mr. Gurney, in a notice published in the 'Zoologist,' mentions a nest of the Kestrel which was placed in the hollow trunk of a pollard tree, and Lord Lilford tells us that he has also several times found it nesting thus on his own estate at Lilford. In Finland and Northern Scandinavia Dresser almost invariably found the bird appropriating the nest of a Crow or Magpie. These were but slightly repaired, and the bird appeared to have used but little trouble in preparing the nest for its own progeny. When in holes of rocks or buildings, the eggs are deposited with scarcely any thing in the way of a nest, though sometimes a little grass, moss, &c. is collected together under them.

The eggs of this bird, from four to five in number, are generally reddish grey, covered so closely with bright fox-red markings that the eggs appear to be almost uniform dark red. They are, however, subject to considerable variation, and we may give the following varieties, from a series in Dresser's collection, as instances of this tendency to variation:—

a. Ground-colour pure white, with minute reddish dots scattered all over the egg.

b. White, with bright-red markings collected chiefly at one end.

c. The ground-colour of half the egg white, and that of the other half dull chestnut, and the markings bright chestnut.

d. Ground-colour dull reddish-white with purplish-chestnut markings, collected chiefly at one end.

In shape they are roundish oval, and in size vary from $1\frac{1}{2}$ by $1\frac{7}{40}$ to $1\frac{13}{20}$ by $1\frac{6}{20}$ inch.

The Kestrel is a great wanderer, and is often found far out at sea. Mr. F. Du Cane Godman informs us that he has often observed them; and Mr. J. H. Gurney has also written to us to say that the bird has occurred in the Seychelles. It is probable that this specimen had been blown out to sea in the course of its southward migration, and had touched at the above-mentioned islands as its first resting-place. Some idea of the migrations of the Kestrel in the Central Palæarctic Region will be gathered from the following note published by Thompson:—

"The first which was seen, on our proceeding in H.M.S. 'Beacon' from Malta to the Morea, at the end of April 1841, was a single individual, which flew close past the vessel when sixty miles west of the Morea, and forty-five distant from Zante, the nearest land. We saw the Kestrel about Navarino at the period just mentioned, and in the month of June met with it at the cliffs of an islet north-east of Port Naussa, in Paros, where it was believed to have an eyry. When Dr. J. L. Drummond was, many years ago, in the 'Renown' (74-gun ship), off Toulon, some hundreds of male Kestrels, on their way south, alighted, quite exhausted, on the rigging; and so many were caught by the sailors, that for some time there was hardly a berth without its Kestrel. The weather was moderate at the time. My friend kept one of them alive for several weeks by feeding it on salt meat steeped for some time in fresh water. But none of the birds lived long, in consequence of no fresh food being obtainable for them."

Mr. J. H. Gurney, jun., has very kindly taken the trouble to collect information for us respecting the food of the present bird.

"An instance is recorded in the 'Zoologist' of a Kestrel eating a Hooded Crow at Faversham: it was not seen to kill it. A keeper at Northrepps, near Cromer, shot one in the act of pulling an earthworm out of the ground. The same keeper has satisfactorily ascertained that

they take the young Pheasants from the coops when they have nestlings of their own; but I do not believe they are destructive to game at any other time, though I once heard of an authentic case of one killing a Quail. On the 28th of November, 1843, my father dissected a Kestrel, and found in it the remains of an earwig. They have been shot in the act of sucking eggs of the Missel Thrush. Another bird, shot at Hampstead on the 11th of May, 1866, contained the remains of a rat; but mice are their common food. Mr. Hepburn, writing in Macgillivray's 'British Birds,' makes a calculation that a single Kestrel will destroy 10,395 mice in 210 days; but I can hardly credit it. Gunn, the Norwich birdstuffer, found frogs in the stomach of one, and, asking in the 'Zoologist' if any one had met with a parallel instance, elicited the fact that one had been shot at Reading in the act of grasping a slowworm. In the crop of another, shot in May in the Isle of Wight, were found several spotted newts. Another, shot not very far from Darlington, contained seventy-nine caterpillars, twenty-four beetles, a field-mouse, and a leech two inches and a half in length. Another was killed when devouring a crab; and in that rare book, Hunt's 'British Birds,' the Kestrel is represented eating a mole. Several instances are recorded in which a Kestrel 'caught a Tartar'. The bird, having descended on an object on the ground, was seen to rise hurriedly, fly right up into the air, and then to drop down lifeless, when a weasel ran away; and when the observer picked up the bird he found its neck bitten out. I am not aware that this singular instance of instinct at fault, which has now occurred several times, is mentioned in any standard work. Many instances are recorded of Kestrels fighting, and of their being shot in the act. An old and a young male are stuffed in the act of grappling one another in the Dover Museum; and under them is written, 'These two Hawks, in a furious fight, clutched one another and, falling into the sea, were drowned.'"

On the nidification of the Kestrel, Mr. Gurney adds:—

"In June 1847, my father saw a Kestrel's nest near Norwich in the hollow of a pollard oak, like an Owl's. The six nestlings and the old birds are now stuffed, in my possession. I have known two instances of Kestrels laying and hatching in confinement, and have read of a third. They generally nest in Crows' and Magpies' nests, and will try to dispossess the rightful tenants while in possession. In Scotland, according to Macgillivray, 'twenty nests might be pointed out in rocks for one in a tree.' In such places the Peregrine is an enemy who often makes a meal of them. The names 'Windhover' and 'Stannel' (sometimes written 'Stonegall,' 'Stanchel,' and 'Steingall') are of great antiquity. It is probable that they both allude to its habit of remaining suspended in the air with outspread tail *and open mouth.*"

A curious instance of the breeding of a Kestrel in confinement has been given to us by our friend Mr. Gatcombe, of Plymouth, who writes as follows:—

"A Mr. Rogers, who has an aviary, and deals in live birds, has had a pair of Kestrels for many years, which are confined in a partition of a cage only about four feet long and four feet high by two feet broad, the female of which lays every year; and a year or two since she hatched five young ones, but behaved in a most extraordinary manner with her offspring. The eggs were laid every alternate day, and the young hatched accordingly; but after nursing the young one most assiduously for a day, directly another came out of the shell she would kill and eat the first, and so on to the fourth, when Mr. Rogers, wishing to save *one* bird at least, took the fifth away and tried to bring it up by hand, but, to his great vexation, failed. I myself saw the female every

day pluming the eggs and young, and can therefore vouch for the truth of this fact. The remarkable part of this statement is the bird's breeding in so small a space."

The Kestrel was formerly tried for Falconry, but was never well adapted for the sport, not possessing the fire and dash of the nobler Falcons. On this subject Dr. Edward Hamilton has kindly sent us the following note:—

"I have trained the Kestrel myself to come to the lure, but never could get it to swoop at birds, although I have starved it almost to death; but put a mouse before it, and it would immediately take it. The favourite food was raw meat or mice. Birds, when given, were always left half plucked or half eaten, as if distasteful."

The figures in the Plate, which represent a male and female, are taken from English specimens in our collection. From these birds also the descriptions are taken.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. ♂. Cookham, April 22nd, 1870 (*J. Ford*). *b, c*. ♂, ♀. Leadenhall Market (*H. E. D.*). *d*. ♀. Rye Harbour, Sussex, Sept. 26th, 1860 (*H. E. D.*). *e*. ♀. Pagham, Sussex, August 1870 (*G. E. Shelley*). *f*. Zoulla, February 1868 (*Jesse*). *g*. Zoulla, March 12th, 1868 (*Jesse*). *h*. ♀. Goon-goona, May 2, 1868 (*Jesse*). *i*. ♀. Madeira, autumn of 1862 (*A. J. Grant*).

E Mus. Lord Lilford.

a. ♂. Lilford, May 1866 (*Lilford*).

E Mus. Salvin and Godman.

a. Park Hatch, Godalming (*F. Godman*). *b*. Japan, 1863 (*Mus. Lugd.*). *c*. Darjeeling (*Eccles*). *d, e*. El Djene, Tunis, March 1, 1857 (*O. Salvin*). *f*. St. Michael's (*G. Brown*).

E Mus. R. Swinhoe.

a. Peking, August 1868 (*R. S.*). *b, c*. ♂, ♀. Hainan, February 1868 (*R. S.*). *d, e, f*. Amoy, October 15, 1866 (*R. S.*). *g, h, i, j, k*. Amoy, November 1866 (*R. S.*). *l, m*. Amoy, December 1866–67 (*R. S.*). *n, o, p, q, r, s, t, u*. Amoy, January 1867–68 (*R. S.*). *v, w, x*. Amoy, February 1867 (*R. S.*). *y*. Amoy, April 28, 1867 (*R. S.*).

E Mus. H. B. Tristram.

a. Castle Eden, Durham (*H. B. T.*). *b*. Algiers, December 1855 (*H. B. T.*). *c*, ♂. Sidon, December 1, 1863 (*H. B. T.*). *d*. ♂. Mount Carmel, March 26, 1864 (*H. B. T.*). *e*. ♂. Etawah, January 1870 (*W. E. Brooks*).

E Mus. Norvicensi.

a. ♀. Objimbinque, Damaraland, February 1st, 1865 (*C. J. Andersson*). *b*. ♂. Seychelles (*Mus. Norv.*).

E Mus. Lord Walden.

a, b, c. England. *d, e*. Asia Minor (*Robson*). *f*. Ortakeuy (*Robson*). *g*. Simla. *h, i*. Umballah (*Scott*). *j*. Nepaul Valley. *k*. North-eastern India. *l*. Maunbhoom (*Beavan*). *m, n*. Candeish. *o, p, q, r*. Ceylon (*Chapman*). *s, t*. Tonghoo, Burmah. *u*. China (*R. Bergman*). *v*. Abyssinia (*Jesse*).



TINNUNCULUS CENCHRIS.
XXIII

FALCO CENCHRIS.

(LESSER KESTREL.)

Falco cenchris, Cuv. Règne Anim. i. p. 322 (1829, ex Frisch, 1739).
Falco naumanni, Fleisch. in Fischer, Jahrgang, 1818 (*teste* Naumann).
Falco tinnunculoides, "Natterer," Temm. Man. d'Orn. i. p. 31 (1820).
Falco xanthonyx, "Natterer," Naum. Vög. Deutschl. An. p. 525 (1822).
*Falco tinnunculariu*s, Vieill. Orn. Franç. p. 36, pl. 16. fig. 3 (1823).
Cerchneis cenchris, Brehm, Vög. Deutschl. p. 74 (1831).
Tinnunculus cenchris, Gray, Gen. of B. ii. p. 21 (1844).
Tichornis cenchris, Kaup, Classif. Säugeth. und Vögel, p. 108 (1844).
Pœcilornis cenchris, Kaup, Contr. to Orn. 1850, p. 53.

Crécerelle crécerellette, French; *Röthelfalke*, German; *Falco grillajo*, Italian; *Primilla*, or *Buero*, Spanish; *Sokoll Krasnoi*, Russian.

Mas pileo toto clare cano, genis albicanti striolatis, loris fulvescentibus: interscapulio scapularibusque pallide cinnamomeo-rufis: dorso imo, uropygio et supracaudalibus canis, illius plumis paullo rufescenti adumbratis: tectricibus alarum superioribus minimis dorso concoloribus, paucis exterioribus rufo lavatis, majoribus canis: remigibus nigricanti-brunneis, pogonio interno plerumque albo, primariis interioribus plus minusve brunneo fasciatis, secundariis brunneis, pennis dorsalibus canis, vix extus rufo marginatis: cauda tota cana prope apicem album late nigro transfasciata: gula et crisso fulvescenti-albis: corpore subtus reliquo dilute cinnamomeo, ubique lateraliter maculis ovalibus nigris notato, pectore superiore et medio lineis nigris tenuibus maculato: rostro indigotico, ad basin flavo, versus apicem nigricante, cera læte flava: pedibus læte flavis, unguibus fere albidis, interdum nigris: iride brunnea.

Fem. cinnamomeo-rufa, pilei plumarum scapis distincte nigricanti-brunneo lineatis: fronte et supercilio angusto albidis: plumis orbitam circumeuntibus nigris: regione auriculari argentescenti-alba: colli lateribus fulvescenti-albidis, plumis medialiter late brunneo lineatis: dorso ubique nigricanti-brunneo transfasciato, et tectricibus alarum ut dorsum coloratis: dorso imo angustius transfasciato, plumis vix canescentibus: remigibus brunneis, pogonio interno albicante, fulvescenti-albo transfasciato, secundariis nigro et rufo transnotatis, dorso concoloribus; cauda pallide cinnamomea, vitta nigra ante apicem transfasciata: subtus fulvescenti-alba, gula cum abdomine, subcaudalibus cruribusque immaculatis: pectore superiore brunneo longitudinaliter striato: pectoris inferioris plumarum scapis brunneo notatis versus apicem in maculam ovalem dilatatis: subcaudalibus et subalaribus albidis, his brunneo longitudinaliter variis: rostro, cera et pedibus ut in mari coloratis, unguibus albis.

♂ *juv.* supra dilute cinnamomea, collo postico fulvescente: pileo et dorso superiore anguste nigro lineatis, hujus plumarum scapis latius longitudinaliter notatis: genis distincte argentescenti-albis: dorso toto imo cano: tectricibus alarum dorso concoloribus, at quibusdam nigro transfasciatis: remigibus nigricanti-brunneis, anguste rufo marginatis, secundariis rufis, nigro irregulariter transfasciatis et marmoratis: cauda pallide fulvescenti-rufa nigro transfasciata, pennis duabus mediis canis, reliquis basin versus canescentibus, omnibus ante apicem fulvum late nigro transvittatis: subtus pallide cinnamomeo-

rufa, pectore superiore sparsim brunneo striato: pectore inferiore et corpore laterali maculis ovalibus notato, vix fasciato: gula et abdomine imo immaculatis, fulvescentibus: subalaribus albis brunneo maculatis.

Adult Male. Entire head, back, and sides of neck clear blue-grey, the lores fulvescent, and the cheeks streaked with white; upper part of the back and scapulars rich cinnamon; lower part of the back, rump, and upper tail-coverts grey; wing-coverts cinnamon like the back, a few of the outermost greater coverts tinged with grey, and some of them altogether grey; quills blackish brown, with a very narrow edging of rufous, the secondaries brown, the dorsal ones grey, very narrowly edged with rufous; tail blue-grey, with a broad black band across it just before the tip, which is white; throat fulvous white; breast pale cinnamon-red, with very tiny brown shaft-markings on the upper part of the breast, which change into oval spots on the lower breast and flanks; lower part of the belly paler, shading into yellowish white on the vent and under tail-coverts; thighs pale rufous, unspotted; under wing-coverts white, marked with oval black spots; bill lightish blue, yellow at base and blackish at tip; cere and orbital region beautiful yellow; legs beautiful yellow, occasionally with the slightest reddish tinge; nails generally white, sometimes blackish; iris dark brown. Total length 13 inches, culm. 1·75 wing 9·2, tail 6·4, tarsus 1.

Adult Female. Tawny red, the crown longitudinally marked with narrow black shaft-stripes, becoming broader on the back of the neck; lores and an indistinct eyebrow whitish; cheeks silvery white; feathers round the eye black; interscapulary region and scapulars barred transversely, as also on the wing-coverts, which, however, are rather paler red; lower part of the back, rump, and upper tail-coverts rather more narrowly barred, and somewhat tinged with grey; quills brown, dirty white on the inner web, which is irregularly notched and barred; the secondaries rufous, barred with brown like the back; tail pale fawn, irregularly banded with brown, the last bar before the tip of the tail black; throat, abdomen, and thighs fulvous, unspotted; breast yellowish fawn, the shafts of the feathers on the upper part distinctly marked with longitudinal lines of brown, the lower part of the breast thickly spotted, the flanks more largely spotted, and the shafts indicated by a broad black line, widening out towards the apex of the feather; bill, feet, nails, and iris as in the male. Total length 12 inches, culm. 0·7, wing 8·4, tail 5·8, tarsus 1.

Young Male. Above pale cinnamon, inclining to fulvous on the back of the neck; the head marked with narrow longitudinal black shaft-stripes; lores and an indistinct eyebrow yellowish white; cheeks dirty white; feathers round the eye greyish black; back and scapulars fawn, with longitudinal shaft-stripes rather plainly marked; lower part of the back, rump, and upper tail-coverts blue-grey; wing-coverts yellowish fawn, paler than the back, showing the remains of the female plumage in the shape of irregular bars; quills blackish brown, dirty white on the under web, irregularly notched with white, tinged with fulvous, the outer ones irregularly mottled with fawn, the inner ones barred with fawn and black like the wing-coverts; tail pale yellowish fawn, barred with brown, the bars gradually disappearing towards the base of the tail, where it is suffused with grey, the two middle feathers entirely grey, the secondaries for the most part blackish, a broad black bar traversing the tail near the tip; throat, abdomen, thighs, and under tail-coverts yellowish fawn; the breast pale fawn; the upper part of the breast longitudinally striped with brown along the shaft, lower part of the breast thickly covered with spots, which almost take the form of bars on the flanks.

The Lesser Kestrel is spread generally over Southern Europe, migrating in winter into Africa. It is only a rare and occasional visitant in Northern Europe. Its eastern range has been given as India and China, but recently Mr. Swinhoe has shown that the species met with in these

countries is different from the Lesser Kestrel of Europe, and he has named the Chinese bird *Falco pekinensis*. There can be little doubt that in this conclusion he is perfectly right. We have compared Mr. Swinhoe's types, as well as two Indian specimens in Lord Walden's collection, with others in our collection from Europe, and find the two species distinct. They are very similar to *F. cenchris*, but everywhere darker in colour, the back more vinous in tint, and very dark vinous red, almost chestnut, on the under surface, which is unspotted. The whole of the wing-coverts also are blue-grey, only a few of them being slightly tinged with rufous. The measurements of an Indian skin are as follows:—Total length 12 inches, culm. 0·75, wing 9·1, tail 6·2, tarsus 1.

The present species has been said to have occurred twice in England, once near York and once near Cambridge. The latter occurrence has been disproved, and we are very sceptical as to the other supposed instance. Degland and Gerbe say that in France it has been seen in several parts, particularly in Languedoc, Provence, and the Pyrenees. M. Philippe, of Bagnères-de-Bigorre, states that "it breeds in some old ruins about twenty-six or twenty-seven kilomètres from this town."

Naumann, who states that but little was known about this bird in his time, says that it is one of the rarest stragglers to Northern Germany, and only knew of two occurrences in his part of the country (Anhalt). These two examples are cited by Dr. Borggreve in his recent work as the only instances of the occurrence of the bird in North Germany; so that it has not been met with since Naumann wrote. Gätke has, however, obtained it in Heligoland. In Styria Seidensacher says:—

"It is not an uncommon bird here, where it breeds on the ruins of the old castle, in hollow oaks, church-towers, &c. It is a migrant, arriving at Cilli early in April (exceptionally) or late in March. Towards the end of July or in August it leaves us, and only a single bird or so remain until September. Besides grasshoppers, mice, &c., lizards are a favourite prey of this bird.

"In favourable seasons some females begin to lay early in May (in 1862 one egg was found on 4th May), and generally the full complement of from four to five is found shortly after the middle of that month. Near the nesting-places the old birds fly round nearly all day, uttering a cry like *psche*, *psch*, *psche*, *wsche*, when the females have not commenced incubation, and at this time they are not at all shy."

Malherbe says it is "accidental during migration in Dalmatia, Italy, and Sicily;" and regarding its occurrence in Savoy, Bailly writes:—

"Hitherto it has been so rare in Savoy that it cannot be considered a regular migrant, but merely an accidental visitor. It has only been observed in the southern valleys, on the plains of Saint-Jean-la-Porte, Sainte-Hélène-du-Lac, on the banks of the Isère, near Sainte-Pierre d'Albigny, and, lastly, at Chambéry and the marshy country in that neighbourhood."

Mr. H. Saunders, in his paper on the Birds of Southern Spain, says:—

"The majority arrive in March and April; but some remain in Andalucia all the winter. The birds swarm about old buildings; and hundreds may be seen any summer's evening in Seville hovering round the statue of Faith which crowns the Giralda. It is a somewhat late breeder; for on the 16th of May I had difficulty in obtaining a complete clutch of eggs."

For the following note we are indebted to the kindness of Major Irby, who has given us a complete series of observations on the Birds of Andalucia:—

"Extremely numerous, arriving in February and leaving in October. A few pair remain at Gibraltar throughout the year. I have never seen this bird nesting in trees, but always in holes of rocks and buildings, or, as in the Crimea, in river-banks. I have taken the nest in a hole in a wall four feet from the ground. It is observed on the Rock of Gibraltar."

The following interesting account of the species has been published by Lord Lilford in his paper on the Ornithology of Spain:—

"The two species of Kestrel, *F. tinnunculus* and *F. tinnunculoides*, are, I think, in April and May, the commonest birds in Andalucia, with perhaps the exception of the Bee-eater (*Merops apiaster*). Every church-steeple, belfry, and tower, every town and village, every ruin swarms with them; I believe I am not at all beyond the mark in saying that I have seen three or four hundred on wing at the same moment on more than one occasion, particularly at Castro del Rio in April 1864. I think the Little Kestrel is somewhat the most abundant of the two species. The cry of these pretty birds is as certain to strike the ear in the towns of Andalucia as the twang of the guitar and click of the castanets. Both species of Kestrel continue on wing long after dark. In the delicious summer nights of Southern Spain, when all the louder sounds of human life are hushed, and nothing breaks the silence but the monotonous note of the little Scops Owl, and the 'wet my lips' of innumerable Quails, I have occasionally been roused from a reverie by the cry of the Kestrels over my head, seemingly passing and repassing, and carrying on their usual evolutions in spite of the darkness. Whilst on this subject, may I ask if any of my readers have ever remarked the extraordinary cries of birds during the night? It has happened to me on several occasions after dark, in different parts of Europe, to hear very large flights of birds, with whose notes (in the majority of instances) I was totally unacquainted, pass over at no great distance. Once, in one of the quadrangles of Christ-Church, Oxford, I listened for at least ten minutes to the continuous cry of a flock of birds—which cry I can only liken, and that very slightly, to the screech of the Night-Heron (*Nycticorax griseus*). Again, on the Esplanade at Corfu, in the summer of 1858, my companion and I were suddenly startled from the somewhat drowsy contemplation of our cigarettes by an uproar as if all the feathered inhabitants of the great Acherusian marsh had met in conflict over our heads; this took place in July, about 1 A.M., when we were lengthening our days according to Tom Moore's well-known precept. It would be quite impossible to convey any thing approaching to a just idea of the Babel of sounds, many of which neither of us had ever before heard; and I have no conception what birds can have produced the greater part of them; but I recognized the wail of the Curlew, the cry of more than one species of Tern, and the laugh of some *Larus*. In Southern Spain the Lesser Kestrel occasionally remains through the winter, but the greater number leave the country about October and reappear in April. The Spaniards call the Common Kestrel *Cernicalo*, and the Lesser *Primilla* or *Buero*: this latter name is sometimes applied to the Hobby also. The Merlin (*Falco æsalon*), in Spanish *Esmerejon*, is common in winter, and well known throughout Spain."

In Sardinia the Lesser Kestrel is common, and breeds. Mr. C. A. Wright says that in Malta the inhabitants call the adult male *Spagnolott*, and the female and young birds *Seker*. "It is,"

he writes, "not uncommon in April and May, and passes sometimes in flocks of nearly a hundred, but is not so often seen as *F. tinnunculus*. I have also obtained it in autumn."

Loche found it "less common in Algiers than the Kestrel, and, like this bird, feeding on small mammals, birds, insects, or, when pressed by hunger, small reptiles. He says he never found them in large flocks, but singly or in pairs. It nests there in the neighbourhood of Boghar."

Mr. C. F. Tyrwhitt Drake, writing on the Birds of Tangiers and Eastern Morocco, says it "passes over during the March migration, but remains all the year at Laraiche. I obtained several specimens thence in February; and it also breeds there."

Lord Lilford states that it "visits Corfu and the mainland in spring. I killed a specimen near Prevesa on the 20th March, 1857, and bought a good pair in the Corfu market in the month of April of the following year. This and the following species are seen in small flocks of from five to ten or twelve, and appear to feed exclusively on insects."

Von der Mühle writes as follows:—

"They are as common in Greece, or at least in the Morea, as the Common Kestrel; they arrive in April, and swarm in the swampy meadows, and from their habit of hovering they form a curious sight. Like the Common Kestrel they hover over their prey, drop on it, catch it, and rising again into the air devour it, seldom acting otherwise. By careful observation they may be seen biting off the feet and wings of the grasshoppers and letting them drop. Those we examined had in their stomachs grasshoppers, lizards, and moles, but never frogs."

Dr. Lindermayer also says:—

"The commonest Hawk after the Common Kestrel. In the spring it arrives with its congeners on the plains and islands of Greece, and spreads itself over the whole country, breeding not only in ruins but in inhabited houses. It feeds on beetles, grasshoppers, and sometimes on small lizards. In the stomachs of those I have shot immediately after their arrival in Greece, I invariably found remains of North-African beetles. It leaves us very early, so that, in Attica at least, none are seen after the end of August."

Dr. Finsch records it from Bulgaria, and the following note has been published by Messrs. Elwes and Buckley in their list of the Birds of Turkey:—

"We never observed this species but once, when snowed up in a Bulgarian village near Salonica on March 6th. Early in the morning a Lesser Kestrel, which had probably just arrived, flew against the house and was killed. We do not think it is found commonly, except in the most southern part of the country."

Krüper, writing from south-eastern Europe, observes:—

"One of the commonest Hawks. I did not note its first arrival, but put it down as late in March. In many Turkish villages (as, for instance, in Turbali) the place swarms with these Hawks. Here it is useful as an exterminator of grasshoppers, and is therefore valued by the Turks. Its eggs are placed, without any nest, under the eaves on the clay walls of houses and stables. I also found a nest in a hole in a mulberry-tree. The eggs are four to five, seldom six, in number. Near Smyrna the breeding-season commences early in May; on the 24th I found the first young."

Mr. Robson writes to us as follows:—

"This species is not uncommon in Asia Minor and Turkey in Europe at the time of

migration. They arrive and pass in small flocks in the early part of April, when many of them are shot by sportsmen, and examples are captured by sailors on board vessels cruising in the Black Sea and the Sea of Marmora. Many of them are also shot, during the autumn migration, in level marshy districts, which they resort to for their food, which consists of beetles, grasshoppers, and small lizards, &c. They breed in the rocky and mountainous district of Kara Hisar, near Trebizond, and are never seen in the neighbourhood of the Bosphorus in summer. Young birds are sometimes taken in the autumn by bird-catchers on limed twigs."

Mr. Strickland's remarks on this bird are as follows:—

"Very abundant in Asia Minor during the spring. It frequents the Turkish villages, and builds in the roofs of the houses. Its mode of hovering is similar to that of the Common Kestrel, but it is more gregarious in its habits than that bird." In the Strickland collection there is a specimen killed by the owner himself at Azani, in Mysia.

Professor von Nordmann says:—

"I have seen several in New Russia (in the summer of 1838), in the Crimea, and at Cherson. My brother has killed it near Wosnessensk, and I have also seen it in the Province of Ghouriel. In the spring of 1835 I saw at Odessa several of these birds, flying here and there, and resting on the tops of the high houses in the town in company with Common Kestrels. It leaves us early in September, and does not return until the spring, a few days after the arrival of the Red-legged Falcon."

Herr H. Goebel says it is "rare in the Government of Kiew." Eversmann states that on his journey from Orenburg to Bokhara he found it common on the northern steppes.

The Rev. H. B. Tristram, in his paper on the Ornithology of Palestine, observes:—

"This species returns with the Swallows in March, and at once consorts with its congener, the Common Kestrel. It may be seen everywhere, in the open glades, or among the lanes between the gardens in the suburbs of the villages pursuing insects, and especially catching cockchafers towards evening. It breeds, so far as we have observed, invariably in communities, usually in narrow fissures of the rocks or in the crevices of ruins, not generally in very inaccessible situations, but always in so narrow a cleft, and at such a depth in, that the eggs are hard to extract. I never found a colony without many of the Common Kestrel breeding in the same place. The largest rookeries of this bird we met with were in the towns of Lyddah and Ramleh, and in the top of an old quarried cave (perfectly protected by prickly fern) in the town of Nazareth. Although the two species are so closely allied, there can be no difficulty in discriminating the eggs; and we found that the Arab boys knew the difference between the two species at once, calling one the black-nailed and the other the white-nailed 'bashîk.'"

Again he writes:—

"It is gregarious about the ruins in the plain-districts. About fifteen or twenty pairs were building their nests in and about the beautiful tower of Ramleh (Arimathea) in company with a still larger number of the Common Kestrel, and flew screaming round me as I climbed the still perfect staircase of the tower. It was interesting to watch them in the evening sweeping like Swallows over the field, or threading their way up and down the lanes formed with prickly pear, in pursuit of the *Scarabæi* on which they were feeding, seizing them with their claws on the wing, and, as they sailed by me, picking off with their beaks the elytra of their prey, and dropping

them almost at my feet. Though I have never found the Lesser Kestrel either in Asia or Africa, except in company with the common species, yet it seems to be without the power of adaptation possessed by its congener, confining itself to old towers and rocks, and living always in communities more or less numerous. I obtained some beautiful specimens at Ramleh. There is a still larger colony about the old ruined English church of Lyddah, over the reputed tomb of 'St. George of merrie England.'"

Mr. E. C. Taylor remarks, "with the exception of one male, killed about the end of March, I never saw this species in Egypt; but I believe it arrives in great numbers later in the spring, and breeds in the country."

Capt. G. E. Shelley also says, "I only shot this bird once; this was towards the end of March, near Benisooéf."

It is evident, however, that both the above observers were not in Egypt at the time that the present species returns, as will be seen by the following observations.

Dr. von Heuglin writes:—

"Visits, as a migrant, in autumn and spring, Egypt, Arabia, Nubia, Kordofan, and Abyssinia, and is often found in large flocks in the acacia- and date-woods and on the steppes. In Egypt it remains from the middle of March to early in May, and passes again in September and October. A few pair are said to breed in the fortifications of Alexandria. According to Vierthaler, a perfect army of these Hawks were seen on the Blue Nile, above a low wood, which was full of locusts. We also saw a similar flock in April at Memphis, and in October at Keren, in the Bogos country. They moult, like the Common Kestrel, in November and December."

Mr. S. Stafford Allen also observes:—

"The Kestrel (which, by the way, runs much smaller in size than British or Maltese specimens), as Dr. Adams observes, is excessively abundant in Egypt, and breeds in April, choosing for that purpose palm-trees, sycamores, or old ruins, particularly the half-ruined 'koubbehs' or mosque-tombs of Arab saints, which are of frequent occurrence.

"Its near relation, the Lesser Kestrel, is not seen in winter, but comes northward in March and April in flocks, often associated with *Erythropus vespertinus* (Linn.), with which it seems to have considerable affinity. I have observed in the former species (*T. cenchris*) that the sexes appear to keep separate in their peregrinations, the females decidedly preponderating in numbers. The reverse is the case with the elegant little Merlin, which Dr. Adams seems not to have met with. Stragglers are seen occasionally during the winter months, but in March and April it is rather a common bird. The birds shot in Egypt are almost invariably males, as I have only seen two females out of dozens shot by myself and others."

Dr. A. Leith Adams, in speaking of *Cerchneis tinnunculus*, says, "There is little doubt, however, that other closely allied species, such as *T. cenchris*, may have frequently been mistaken for, or perhaps considered identical with, the sacred bird, and accordingly worshipped and embalmed."

The Lesser Kestrel visits Southern Africa in winter. Mr. J. H. Gurney writes to us as follows:—"According to Andersson's notes *Tinnunculus cenchris* appears in Damaraland every rainy season, in company with *Erythropus vespertinus* and *Milvus migrans*, but in much smaller

numbers. A few individuals sometimes extend their migrations to the colony of the Cape of Good Hope."

Mr. Layard has kindly sent us the following note:—

"*Falco cenchris* appears to be getting more and more common in South Africa every year. About the years 1859 and 1860 it first made its appearance in the colony, following the flights of locusts. Mr. Cairncross, of Swellendam, procured a pair in 1860, and sent them to me as a novelty. I am sure that, had they been in that neighbourhood before, my friend, who is a keen collector, would have noticed them. Mr. Sclater, to whom I forwarded them, wrote that they were the first he had seen from south of the equator.

"In 1865 I saw a few perching on the telegraph poles and wires in the open country between Swellendam and Caledon, from whence they swooped down on locusts, centipedes, and such like insects, as I ascertained from the contents of their stomachs.

"On the 7th January, 1870, Mr. Cairncross wrote:—'I counted to-day thirty-four examples of *F. cenchris* drifting along over the street (at Swellendam), about 200 feet over head, going to the westward. Locusts plentiful this year.' I fancy they are now permanently established as residents in the colony.

"Dr. Exton obtained it plentifully in the country north of Sechele's; 'they were harrying a flight of locusts, taking them on the wing, striking the insects with the foot, and then carrying them to their bills.'

"From all I can gather from conversations with hunters and others, they seem abundant to the north-eastward, in the locality described by Dr. Exton, and further towards the sea-coast on the western side. It is not easy for the uneducated eye to distinguish between the Kestrel and *F. rupicolus*, especially on the wing; but all agree that there are two kinds of 'Wind-hovers,' a large and a small one, so I conclude the small bird to be *F. cenchris*."

In habits the Lesser Kestrel scarcely differs from the Common Kestrel, being, however, more gregarious. To the excellent accounts above given we can add nothing, and shall conclude by transcribing Dr. Krüper's notes made in South-eastern Europe. In his notes on the Ornithology of Greece he says:—

"In Greece it is called κιρκινέσι and also κιρκηνέον. It is not found in all parts of the country, particularly those parts at a great altitude, and is scarcely known in the mountain-villages. It inhabits the plains near water. Here it is found numerously, as these places are well supplied with insects, and particularly grasshoppers, which constitute its chief food. Hovering in the air it perceives these in the grass, pounces on them, and soon rises again to continue its search. It is a pretty sight to watch the Lesser Kestrel, particularly when they are hunting in company; and they are then an easy prey to the sportsman. It is easily recognizable from afar by its continued loud cry, which sounds like the Greek word *vévai* (βεβαίως, 'yes, certainly'). I first heard the cry of the Lesser Kestrel on the 12th April, 1858, when I landed at Missolonghi, and was enjoying the hospitality of Dr. Nieder. As this bird nested in the neighbouring roofs, I often heard the cry without knowing what it was, until my host told me that it was uttered by the Lesser Kestrel. Throughout the summer I had opportunities of observing this pretty bird at its nest. I reckon that it arrives late in March, for I observed the first in 1860 on the 12th of March, and in 1859 on the 16th of March. The eggs are deposited

late in April or early in May. Thus, in 1858, I found on the 29th of April a full clutch, and in some nests only one egg; and in 1859 I found complete clutches in all nests on the 7th of May. This year (1860) I found on the 9th of May all nests empty, as in April and May the weather was unusually bad. The general number of eggs is four, sometimes five. I never found a clutch of six, as did Mr. Seidensacher, at Krain.

"The Lesser Kestrel makes no nest, but deposits its eggs, often without any thing placed under them, in the hollow of a wall or roof; and in the hole are found remains of grasshoppers and other insects. In many houses there are several nests, but most are found in old ruins. The entrance to the nest is easy to find, being white with the excrement of the bird. This species is so fond of its progeny that it will not leave its nest, and can be taken on it with the hand."

The eggs of the Lesser Kestrel are subject to quite as much, if not more, variation than those of the Common Kestrel. We have before us a large series from Dresser's collection, taken chiefly in Styria, the general run of which are like the rusty-coloured eggs of the Common Kestrel in colour; but amongst them are the following varieties, viz.:—*a*, dirty white with a very few faint red spots; *b*, greyish white, covered at the smaller end with sparse reddish spots, and at the larger end thickly blotched with dark red; *c*, nearly pure white, half the egg being very closely blotched with deep reddish brown, showing scarcely any of the ground-colour, and but few reddish spots scattered over the other end; *d*, light reddish clay-coloured, marked here and there with a few small dark red spots; *e*, light buff, spotted all over with scattered blackish-brown spots; *f*, ground-colour light buff, smudged closely all over with dull reddish brown. In size the eggs vary from $1\frac{4}{40}''$ by $1\frac{8}{40}''$ to $1\frac{6}{40}''$ by $1\frac{1}{2}''$, and in form are sometimes roundish, sometimes ovate, sometimes pure oval.

Before dismissing the subject we wish to draw attention to the following statement published by Mr. Howard Saunders in a recent number of 'The Ibis.' In writing about *F. tinnunculus*, he observes:—

"I fancy that there is either an intermediate race, or that this species and *F. cenchris* interbreed, as I took a white-clawed bird off hard-set eggs in the Cathedral of Seville on May 16th, when the latter had scarcely begun to lay its very distinct eggs; in length of wing this female is identical with specimens from other localities." Mr. Saunders has kindly lent us this specimen, and, we must confess, it puzzles us greatly. From its white claw and general appearance we should be inclined to refer it without hesitation to the Lesser Kestrel; and we believe it to belong really to this species, the only facts militating against this idea being the large size of the eggs (which Mr. Saunders calls "of the boldest type of the Common Kestrel, one being exceptionally large, like a small Peregrine's") and the slightly larger size and longer wing.

We would remark that the white claw is not always a good character whereby to distinguish this species; for Dresser shot a fine male at Cilli, in Styria, which had the claws "light blue," as noted at the time of death. Still most examples have white claws; and Dr. Tristram tells us that the Arabs distinguish between the two species by means of the claws.

The synonymy of this species is in an unsatisfactory condition, and it is doubtful whether the real name by which the bird should be known is not *Falco naumanni*; but we have not been able to discover the periodical in which this name is stated to have been published, nor does any one else appear to have been more fortunate. Then, again, Natterer's names are apparently only

MS. appellations forwarded to Temminck and Naumann in private communications. Degland and Gerbe refer to *Falco tinnuncularius* of Vieillot as published in 1817 (Nouv. Dict. xi. p. 93), but no Latin name is here given. It is evident, therefore, that Temminck's name of *F. tinnunculoides* will stand, should not an older one be found in the former works of Naumann or in the periodical above referred to, as the title proposed by Frisch is pre-Linnean.

Figures of the Lesser Kestrel will be found in the following works:—Naumann's 'Vögel Deutschlands,' Taf. 29; Gould's 'Birds of Europe,' pl. 27; Werner's 'Atlas' to Temminck's 'Manuel d'Ornithologie'; St.-Hilaire, 'Exp. Scientifique de Morée,' pls. 2 & 3; Bree's 'Birds of Europe'; Fritzsch's 'Vögel Europas,' &c.: but of all the above authors, Naumann and Isidore Geoffroy St.-Hilaire have alone given an illustration of the female.

The descriptions of the birds in the present paper have been made from the following examples:—That of the adult male is taken from a beautiful skin marked as fully adult by Dr. Krüper, and sent by that well-known naturalist from Attica, that of the female being from an adult bird taken in Seville Cathedral by Mr. Howard Saunders himself. The young male described was sent to us by Signor Olcesse, of Tangiers. In the Plate we have figured the above-mentioned adult and young males, as the female is rather like that of the Common Kestrel, and we thought it would be interesting to show a specimen in the act of gaining his adult dress, as it illustrates the way in which this plumage is gradually assumed. It is a noticeable fact that very old females of both the Common and Lesser Kestrels do assume more or less of a blue shade on the upper tail-coverts; and it is here that the first blue shade appears in the young male, indicative that he is about to assume his more beautiful adult dress. Of the three species of Kestrel mentioned by us in the present work it would seem as if *F. tinnunculus* was the oldest species on the face of the earth, and *F. pekinensis* the most recent; the latter, indeed, has doubtless not long been evolved from *F. cenchris*, the change of plumage having been induced by its comparative isolation,—that is to say, that the journey from North China to India being sufficient to satisfy the migratory instincts of the progenitors of *F. pekinensis*, they did not follow the bulk of migrating birds to Africa, but stayed in India, and thus became by degrees modified into a distinct species.

If the ancient Kestrels, as was most probable, were similar in sex like other Hawks, we should have both male and female rufous in colour, spotted below, barred above. If we dare judge from the fact that the female of the bird of the present day has a shade of blue on the lower back when very old, and that the young male, similar to the female in his juvenile plumage, first shows a trace of approaching adolescence by the appearance of blue on the same part, we might easily conceive that the first tendency to sexual variation commenced thus, and that the advantage gained by the lucky individuals being transmitted to their progeny, a gradual tendency to don a grey plumage would be inherited; and this being of advantage in sexual selection, was probably the case. This blue coloration extended to the tail itself (this being in the young bird at the present day the next part to assume the blue tint) would still further conduce to the benefit of the male; while the blue on the head, a still further supplement to his beauty, would have been the latest addition to his dress (as it is in the young bird still the last to be assumed). The Lesser Kestrel (*F. cenchris*) has still further improved upon the garb of his more ancient ally by assuming a richer coloration and a more slender form, no spots being

apparent on the back; while *F. pekinensis* is a still more beautiful bird, being coloured in the same style as *F. cenchris*, but not having the spotted breast of the latter, and being altogether more richly coloured. A spotted plumage having been the characteristic of the ancient progenitors, the more recent form may be noted for the total absence of spots in the adult male at least.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. ♂ ad. Attica (*Dr. Krüper*). *b, c, d.* Tangiers (*Olcesse*). *e.* ♂. Cilli, Styria, April 17th, 1866 (*H. E. Dresser*).

E Mus. Howard Saunders.

a, b. ♀. Seville Cathedral, May 16th, 1868 (*H. S.*).

E Mus. Lord Lilford.

a, b, c. Aranjuez (*L.*). *d.* Seville (*L.*).

E Mus. H. B. Tristram.

a, b. Arimathea (*H. B. T.*). *c, d.* Palestine (*H. B. T.*).

E Mus. R. Swinhoe.

a, b. (*Falco pekinensis.*) Peking, August and September 1868.

E Mus. Lord Walden.

a, b. (*F. pekinensis.*) India (*Sturt*).

Genus PANDION.

Accipiter apud Brisson, Orn. i. p. 362 (1760).
Aquila apud Brisson, tom. cit. p. 440 (1760).
Falco apud Linnæus, Syst. Nat. i. p. 129 (1766).
Pandion, Savigny, Syst. Ois. de l'Egypte, &c. p. 36 (1810).
Triorches apud Leach, Syst. Cat. B. & M. Brit. Mus. p. 10 (1816).
Balbusardus apud Fleming, Brit. Anim. p. 51 (1828).

This genus contains only a single species, *Pandion haliaetus*, which inhabits the Palæarctic, Ethiopian, Oriental, Australian, and Nearctic Regions, ranging also into the northern portions of the Neotropical Region. Mr. Sharpe, indeed, separates the Australian bird as a race, or subspecies, under the name of *Pandion leucocephalus* (Gould), on account of its smaller size; but, as stated in the following article, it appears to me that the difference in size does not constitute a sufficiently good character by which it can be separated, as examples from the same locality differ so greatly in size as to prove that the difference is, as a rule, individual and not climatic.

Full particulars of the habits and nidification of the Osprey are given in the following article.

Pandion haliaetus, the type of the genus, has the bill short, rounded, upper mandible with the edges festooned, the tip elongated, decurved, acute; nostrils oblong, oblique; wings long, pointed, the first quill longer than the fifth, the third longest; tail rather long, slightly rounded; legs strong, tarsi short, covered with reticulated scales; toes long, slender, curved, acute, free, the outer one reversible; plumage compact, the feathers wanting the accessory plumule.



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J G Keulemans lth

M & N Hanhart imp

OSPREY.

PANDION HALIAËTUS.



M&N.Hanhart imp

OSPREY.

YOUNG AND NESTLING.

PANDION HALIAËTUS.

(OSPREY.)

The Fishing-Hawk, Catesby, Nat. Hist. Carol. i. pl. 2 (1731).
Accipiter falco piscator carolinensis, Briss. Orn. i. p. 362 (1760).
Aquila haliœetus seu Aquila marina, Briss. tom. cit. p. 440 (1760).
Falco haliaetus, Linn. Syst. Nat. i. p. 129 (1766).
Le Balbuzard, Buff. Hist. Nat. Ois. i. p. 103, pl. 11 (1770).
Falco arundinaceus, Gmel. Syst. Nat. i. p. 263 (1788).
Falco carolinensis, Gmel. ut suprà (1788).
Falco cayennensis, Gmel. ut suprà (1788).
Aquila piscatrix, Vieill. Ois. Am. Sept. i. p. 29, pl. 4 (1807).
Pandion fluvialis, Savigny, Syst. Ois. de l'Egypte, p. 36 (1810).
Aquila haliaëtus (L.), Wolf, Taschenb. d. deutschen Vogelk. i. p. 23 (1810).
Accipiter haliaëtus (L.), Pall. Zoogr. Rosso-As. i. p. 355 (1811).
Triorches fluvialis (Sav.), Leach, Syst. Cat. M. & B. Brit. Mus. p. 10 (1816).
Aquila balbusardus, Dumont, Dict. Sci. Nat. i. p. 351 (1816).
Pandion americanus, Vieill. & Aud. Gal. Ois. p. 33, pl. 11 (1825).
Balbusardus haliaetus (L.), Flem. Brit. Anim. p. 51 (1828).
Pandion haliaetus (L.), Less. Man. d'Orn. i. p. 86 (1828).
Pandion alticeps, C. L. Brehm, Vög. Deutschl. p. 33 (1831).
Pandion planiceps, C. L. Brehm, op. cit. p. 33 (1831).
Pandion carolinensis, Aud. B. N. Am. pl. 81 (1831).
Pandion leucocephalus, Gould, Proc. Zool. Soc. 1837, p. 138.
Pandion indicus, Hodgs. in Gray's Zool. Misc. p. 81 (1844).
Pandion ichthyaëtus, Kaup, Classif. Säugeth. u. Vög. p. 122 (1844, nec Horsf.).
Pandion gouldi, Kaup, Isis, 1847, p. 270.
Pandion albigularis, C. L. Brehm, Vogelfang, p. 12 (1855).
Pandion minor, C. L. Brehm, ut suprà (1855).
Pandion fasciatus, C. L. Brehm, ut suprà (1855).
Pandion clypeatus, L. Brehm, Allg. deutsch. naturh. Zeit. ii. p. 64 (1856).
Pandion haliaetus, var. *carolinensis*, Ridg. Proc. A. N. Sc. 1870, p. 143.

Iolair uisg, Gaelic; *Balbusard*, French; *Aguia pesqueira*, Portuguese; *Aguila pescador*, Spanish; *Falco pescatore*, Italian; *Arpa*, Maltese; *Bou-haut*, Moorish; *Flussadler*, *Fischaar*, *Fischhabicht*, German; *Visch-Arend*, Dutch; *Flodörn*, *Fiskeörn*, Danish; *Fiskejo*, *Fiskeörn*, Norwegian; *Fiskljuse*, Swedish; *Kalasääski*, Finnish; *Skopá*, Russian; *Tschiftscha*, Lapp.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 414, 416; Werner, Atlas, *Rapaces*, pl. 21; Kjærb. Orn. Dan. taf. 2;

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Fritsch, Vög. Eur. taf. 9. fig. 1; Naumann, Vög. Deutschl. taf. 16; Sundevall, Svensk. Fogl. pl. 29. fig. 1; Gould, B. of Eur. pl. 12; id. B. of G. Brit. i. pl. 5; Schlegel, Vog. Nederl. pl. 30; Audub. B. of Am. pl. 81; Susemihl, Vög. Eur. taf. 24.

♂ *ad.* capite albo, pileo conspicuè nigro-fusco striato, capitis lateribus nigro-fusco notatis, hypochondriis et fasciâ ab oculo ad latera colli utrinque fuscis: nuchæ plumis elongatis, lanceolatis, vix ochraceo lavatis, nonnullis nigro-fusco apicatis: collo postico et corpore suprà saturatè fuscis, dorso vix nitente: remigibus nigro-fuscis, in pogonio interno ad basin albidis, fusco transversim fasciatis: caudâ nigro-fuscâ, rectricibus centralibus immaculatis, reliquis in pogonio interno albidis nigro-fusco fasciatis: corpore subtùs albo, pectore vix pallidè brunneo et ochraceo notato: rostro nigricanti-corneo: iride flavâ, cerâ cæruleâ, pedibus pallidè plumbeis.

♀ *ad.* mari similis sed major, capite et pectore magis fusco notatis.

Juv. capite et nuchâ magis nigro-fusco notatis: plumis in corpore suprà et alis fere omnibus albido marginatis seu apicatis, caudâ magis fasciatâ et valdè albo apicatâ: corpore subtùs albo, pectore pallidè brunneo vix rufescente isabellino lavato plumis albo notatis et marginatis.

Adult Male (Astrachan, April). Head white, on the crown broadly striped with blackish brown, which colour forms almost a patch before and above the eye; ear-coverts and a stripe to the hind neck blackish brown; feathers on the hind crown and nape elongated, lanceolate, washed with yellowish, and some terminated with blackish brown; hind neck, and, to some extent, the sides of the neck, back, and upper parts generally dark brown, the back faintly glossed; quills blackish brown, on the basal portion of the inner web varied with white; tail dark brown, the central rectrices uniform in colour, the remainder on the inner web dull white, broadly banded with dark brown; underparts white, the breast faintly marked with pale brown and dull ochreous brown; bill blackish horn; cere blue-grey; iris bright yellow; legs pale lead-blue. Total length about 23 inches, culmen 1·9, wing 19·3, tail 8·7, tarsus 2·2.

Adult Female (Silesia). Resembles the male, but is larger, the head is more marked with dark brown, and the breast is conspicuously marked with brown, which forms a broad band across the breast. Culmen 2·0 inches, wing 20·1, tail 9·5, tarsus 2·3.

Young Female (Sarepta, October). Differs from the adult in having the head and hind neck rather more varied with blackish brown, almost all the feathers on the upper parts of the body and the wings margined or tipped with white; tail more conspicuously barred than in the adult, and broadly tipped with white; underparts white, the breast-feathers dull light brown, edged and marked with white, and slightly washed with rufous isabelline.

Nestling (Astrachan). Covered with close, thick, but short down, the general coloration being sooty blackish; on the head and sides of the neck are longer tufts of light, warm sandy down, growing closely together so as to hide the other down; upper throat dull white; a broad white stripe passes from the nape to the tail; upper parts slightly varied with tufts of warm sandy down and a little white; abdomen dull white; inner part of the thighs white.

Obs. Mr. R. Collett informs me that two young Ospreys about eight days old, taken from a nest in Norway, were different both in size and colour. "The biggest," he writes (total length 220 millims.),

"was enveloped in *black* velvety down, but not thick. In the down the white shafts of the feathers (the extremities furnished with downy tufts) could be plainly distinguished; on the head all the shafts were black. The smallest of the nestlings (187 millims. long) was covered with *white* down, the colour on the back only being black; above the eye and extending backwards towards the region of the ears was a blackish stripe; shafts of feathers indistinct."

Few of our European birds have so extensive a range as the Osprey, which is found throughout Europe and Africa, from as far north as the forest extends down to South Africa. It also inhabits the continent of Asia generally, Australia, New Zealand, some of the islands of the Pacific, and the continent of America from the fur-countries down to Brazil. With us in Great Britain it is a summer visitant, and breeds in Scotland. In England it has been obtained on almost every part of the coast, and on several occasions tolerably far inland, as for instance in Oxfordshire and Shropshire. Mr. Mansel-Pleydell says that in Dorsetshire it is commoner than the Sea-Eagle. Several have, he says, "been killed at Weymouth and Poole, whose estuaries attract this bird of prey. Mr. Thompson has an adult male in his collection which was shot in Weymouth Backwater, September 22nd, 1870, whilst being mobbed by a Kestrel; a second was seen the next day, but not secured; and one was shot the same year in Poole Harbour. Several other instances have occurred from the year 1846 to 1870, which is our last and most recent record. In Christchurch Bay this bird is called the *Mullet-Hawk*." Mr. Cecil Smith informs me that in Somersetshire it is met with occasionally in the autumn, and occurs as a tolerably rare straggler both in North and South Devon. On the east coast it is also met with on passage; and Mr. Stevenson writes (B. of Norf. i. p. 5) as follows:—"It still visits us as a regular migrant in small numbers; but though formerly, as stated by Messrs. Gurney and Fisher, most plentiful during the autumn months, it has of late years entirely altered its habits in this respect, and appears almost invariably in April and May, and occasionally even as late as the middle of June." As regards its occurrence in Scotland, it used formerly to breed regularly in several localities; but, Professor Newton writes (Yarr. Brit. B. i. p. 33), "all this is now changed. Twenty years since, between 1849 and 1851, Mr. Wolley found that, owing to the destruction of their occupants, most of the breeding-places named by former observers were deserted—the only exceptions being a few nests in the northern counties of Sutherland and Inverness, described by Mr. St. John, in visiting one of which Mr. Wolley nearly lost his life. Some years passed, and it came to be believed that the Osprey as a native bird had been thoroughly rooted out; but in 'The Ibis' for 1865 Mr. Rocke stated that the species bred every year in Inverness, whence Lord Hill had several times received the young; but finding it impossible to rear them, he had requested that in future they might not be disturbed. About this time, also, information reached Mr. Wolf, the accomplished zoological artist, that a second spot in another quarter was still tenanted; and lately Mr. Gray has announced that there were three or four strictly protected breeding-stations in Ross-shire, and that he has authority for believing that one in the south-west of the Kingdom is still used. It thus appears that there is still a sufficient number left to stock the whole of Scotland; and it may be hoped that the efforts of those who are anxious for the species to retain its rank as a native of our island will meet with success." It visits the Orkneys and Hebrides as a straggler; and Mr. Saxby writes (B. of Shetl. Isl. p. 9), in Shetland it "is known only as a straggler, appearing at long and uncertain

intervals, and then, as a rule, but singly, although my brother-in-law records the simultaneous appearance of three or four in the spring of 1843, and of a pair some years previously." In Ireland, Thompson states, it is only known as an occasional visitor; and it has not been recorded from Iceland; but Professor Newton says that a single specimen was obtained at Godhavn, in Greenland, by Mr. Whymper, and sent to Copenhagen; and Mr. H. C. Müller records one instance of its occurrence in the Færoes. In Scandinavia it is common and generally distributed, but only during the summer season. Mr. Robert Collett informs me that it arrives in Norway late in April, and breeds on most of the lakes, though nowhere numerously. It is found from Christiansand to the Varanger fiord, both in the lowlands and in the mountains up to the birch-region. It migrates southward in October when ice begins to form on the lakes. Sundevall says that it is found throughout Sweden as far north as the forest extends, and is a summer visitant, arriving in April and leaving in September. Pastor Sommerfelt says that it breeds at Karasjok, Alten, and Enare, and possibly in the conifer-woods in South Varanger, and on the Tana river, where it is known to the river and fell Lapps, and he saw it at Polmak in 1855. I met with it in most parts of Finland, from Wiborg to the Lapland frontier; and Von Wright says that it occurs throughout that country, both on the coast and on the inland lakes during the summer. In Russia it occurs at least as far north as Archangel. Sabanäeff met with it in various parts of the Governments of Jaroslaf and Vologda, especially on the Lake of Kuben. It has also been observed near Moscow and in the Government of Tula. He met with it on the Ural; but it was numerous only on those lakes which abound with fish in the districts of Ekaterinburg and Shadrinsk. In the latter district it builds in almost woodless parts. Meves met with the Osprey on all the larger Lakes from the Novaja Ladoga up to Archangel. He writes that he saw an Osprey flying from Lake Ladoga to a neighbouring wood with a fish in its claws. It held the fish by the head; and the whole of the hinder part stuck up in the air, higher than the bird's back, looking like a flag.

In a letter from Dr. Severtzoff, this gentleman informs me that it breeds on the Don and Bivioug (a river flowing into the Don), in the Voronege Government, where it arrives about the middle or end of April, and leaves late in September or early in October.

In the Baltic provinces and the eastern portion of North Germany it is a regular summer visitant, being most numerous on the inland lakes of Brandenburg, Pomerania, and Prussia—but is much rarer in Western Germany, where it is only rarely known to breed. Kjærbölling says that it is not uncommon in Denmark, and breeds in Seeland, on Lolland and Falster. Mr. Bonnez obtained its eggs in Jutland. It occurs in Western Germany on passage; and Mr. Sachse, writing from Altenkirchen, in Rhenish Prussia, informs me that he only sees it there now and again on the autumn passage, but a pair sometimes nest in the forests near Neuwied; and Steinbrenner records it as breeding near Frankfort-on-the-Main. Mr. Labouchere informs me that it is rare in Holland, but it is said to have bred there; and it is stated to be rare also in Belgium, occurring here and there on the Meuse and Scheldt; but it is said to nest occasionally on the Upper Meuse in the Luxemburg territory. In France it occurs annually in the northern provinces during passage, and is tolerably common towards the south and east; and Professor Barboza du Bocage records it from Portugal, where, he states, it is common. It occurs in Spain, both in the summer and in the winter season; but Colonel Irby states (Orn. Str. Gibr. p. 55) that it is most abundant in the Straits in winter, a pair nest on the rocks westward of Tangier, and another

pair breed regularly at Gibraltar. Herr von Homeyer states that it occurs but rarely in the Balearic Isles; for he only observed two at Cabrera and a pair at Dragonera, which latter appeared to have a nest in the neighbourhood. In Savoy it is rare; and Bailly does not believe that it breeds there. Nor is it common in Italy, where, as a rule, it occurs only in winter; but in Sicily it is a partial resident, and is believed to breed there, as it certainly does in Sardinia, a nestling being in the Cagliari Museum. In Southern Germany it breeds in many localities, and especially in the well-watered country of Bohemia, where, Dr. A. Fritsch states (J. f. O. 1871, p. 177), it nests at the Kresicer lake, near Kopidlno, near the Semtiner lake, near Pardubic, in Southern Bohemia in the Neuhof district and near the ruins of Wittingshausen. Specimens have been killed at Zavist, near Prague, Eule, Podebrad, Jiçin, Pürglitz, Rumburg, at Zbirov (according to Lokaj), at Hirschberg (according to Fierlinger), and (according to Osterdahl) at Pardubic. The Ritter von Tschusi-Schmidhofen informs me that it occurs throughout Austria on passage, and breeds there not uncommonly, but, owing to so many of the small lakes having been drained off, it has become much rarer. According to Althammer it is very rare in the Tyrol; for he only cites one instance of its occurrence; and Herr von Tschusi himself saw it on one occasion on the Garda lake. On the Lower Danube it appears to be somewhat scarce. I have seen it there on one or two occasions; but Mr. Farman speaks of it as being but rarely met with in Bulgaria, and only occasionally seen on the coast and on the banks of the Devna lakes. M. Alléon found it nesting in the forest of Belgrade, in Turkey; but otherwise it seems usually to be met with only on passage. In Greece, Dr. Krüper says, it probably occurs only on passage, and he does not know of any instance of its breeding there. A specimen in the Museum at Athens was killed on the 12th March, 1868, in Attica; and Lord Lilford found it numerous in March and September in Corfu and in Epirus. Professor von Nordmann states that he has not observed it on the coasts of the Black Sea; and Ménétriés does not record it from the Caucasus; but De Filippi met with it there. I have no data respecting its occurrence in Asia Minor; but it is found in Palestine, and Canon Tristram writes (Ibis, 1865, p. 253) as follows:—"We never paid a visit, either in winter or spring, to the neighbourhood of Carmel or Kishon without seeing the Osprey. There are some lagoons near the mouth of the Kishon admirably adapted for this bird; and there it could at any time be seen perched on some naked stump projecting from the water, or frequently on the coast, on the extremity of the skeleton rib of some stranded wreck. The marshes of the Zerka (Crocodile river) are also stated to be a favourite resort. We saw the Osprey as late as April, but did not discover its nest. In spite of the amazing abundance of fish in the Lake of Galilee, we never noticed this bird there, probably because of the absence of suitable cover. It has been shot at Beyrout." It visits North-east Africa in winter, and is resident on the Red Sea. Captain Shelley says that it is plentiful throughout Egypt and Nubia during the winter. "In the Fayoom," he states, "I found it extremely abundant, and not so shy as along the banks of the Nile." And Mr. J. H. Gurney, jun., informs me that he frequently saw Ospreys on the sand-banks of the delta, but obtained the first specimen at Mershoom. Going up the Nile he saw eighteen in two days, but very few coming down. At Gebel Abou Fader a pair seemed to have a nest in the cliffs. He did not observe any after the 1st of April. Von Heuglin states (Orn. N.O.-Afr. i. p. 55) that it occurs in the winter along the Nile, southwards to the Kir and Gazelle River, but is commoner on the delta, where, however, it is not a resident, though it

remains throughout the whole year along the Red Sea and on the Somali coast. Dickinson observed it near Chibisa, on the Zambesi.

In North-west Africa it appears to be met with at all seasons of the year. Loche states that though not numerous in Algeria a few pairs breed there, and he obtained its eggs; and Mr. Taczanowski saw a pair at Philippeville in April, which seemed to be preparing to breed there. Mr. Stark informs me that it breeds commonly in the cliffs in Northern Morocco; and M. Favier writes (*fide* Irby, *l. c.*) that it is "not uncommon near Tangier, living among the rocks on the coast, where they nest in March, laying two or three eggs; the young do not fly until July. The migratory birds arrive in October and November, returning north in March." It has also been met with in Senegal, on the Gold Coast, and on the Cape-Verde Islands. Mr. E. L. Layard says (B. of S. Afr. p. 16) that Verreaux records it from South Africa; and Mr. Ayres found it at Natal, where it frequents the saltwater lakes near the sea; but he never saw it from the Cape colony.

In Asia it is very generally distributed. Mr. Blanford informs me that it is rarely seen in the interior of Persia; but he observed it in the Elburz Mountains, and it is common about the Caspian and on the Baluchistan coast. Mr. Hume writes (Rough Notes, p. 236), "Found throughout the lower ranges of the Himalayas, in the rocky gorges, and all the larger streams, and along the course of the Ganges and the Jumna from their mouths almost to their sources. I have from time to time observed it in the Cawnpoor, Etawah, Agra, and Allyghur districts. I met with it also on the Sutledge, at the Sambhur lake, and the Nujjufgurh jheel; and I recently shot a very fine one close to the Saharunpoor, on the Western-Jumna Canal. Mr. Brooks says that this species is 'common on the river Tonse, also inland in the Mirzapoor district where there are jheels and tanks. I shot one at night off a post in the middle of a tank. Though thus widely distributed, this species is nowhere, I believe, in India numerically abundant.'" Mr. Holdsworth says that it is rare in Ceylon, and he only once observed it, perched on a buoy in Galle harbour. Lord Walden has two specimens from Ceylon. Dr. Severtzoff writes to me that he met with it on almost all the large rivers of Turkestan, on the Oxus, the Jaxartes, the Yli, the Chirckik (which flows into the Iaxartes), the Koksu (flowing into the Balkhash lake), always in the summer season; but he never found its nest. It is, however, numerically scarce, and during the space of many years he collected there he only obtained three specimens. It is recorded from Siberia by Schrenck and Radde, but not by Von Middendorff. The former states that it is not uncommon on the Amoor river; and Dr. Radde met with it throughout the country he explored, except on the Mongolian steppes. It was less common on Lake Baikal than on the rivers flowing into it. It is a migrant, arriving in the Bureja Mountains about the middle of April. Dr. Dybowski records it as common in the Darasun district (in Dauria), especially near the Onon river. Père David states that he saw two individuals in Mongolia on passage in spring. Mr. Swinhoe met with it throughout China, Formosa, and Hainan; and Temminck and Schlegel record it from Japan. It occurs on nearly all the islands in the Malay and Indian archipelagos, Ceram, Celebes, Borneo, and Java; and Mr. Wallace obtained it in New Guinea. It is not recorded from New Zealand; but Mr. Gould writes (Handb. B. of Austr. i. p. 22):—"Though not an abundant species, it is generally diffused over every portion of Australia suited to its habits. I myself shot it in Recherche Bay, at the extreme south of Tasmania; and Gilbert found it

breeding both at Swan River on the western, and at Port Essington on the northern shore of Australia."

In the Nearctic Region the Osprey is also widely distributed, being met with from the Atlantic to the Pacific. In the fur-countries it is tolerably common. I used frequently to see it in various parts of Canada and New Brunswick, and have known of several nests in the latter province. It arrives there early in April, and leaves about the middle of September. Mr. Ridgway says that on the Atlantic coast it is found from Labrador to Florida, with the exception of a portion of Massachusetts around Boston, where it does not breed, and where it is very rarely met with. It also occurs on the coast of Texas. It is occasionally seen in Jamaica and in Cuba, but is not known to breed there. Mr. Newton states that it occurs on the island of St. Croix at all times except during the breeding-season; and Mr. E. C. Taylor records it from Trinidad. In the interior of North America it is less numerous than on the coast, but is met with on the lakes and larger rivers. Mr. A. C. Stark informs me that he found it breeding in single pairs along the south shore of Lake Superior, from Duluth in Minnesota to Marquette in Michigan, never, however, in colonies as in the Atlantic States. In Western Minnesota, a country full of lakes, and apparently well adapted to its habits, he never saw it—though the Bald Eagle is very common, and he thinks that its abundance may account for the absence of the Osprey. Mr. H. M. Labouchere also informs me that he observed it on Lake Erie, the Mississippi, and the St. Croix river, in the State of Minnesota. On the Pacific side of the continent it is widely distributed. Mr. Dall (Trans. Chic. Acad. Sci. i. p. 272) says that Bischoff obtained specimens, with eggs, from Sitka. He himself obtained several near Nulato, in May 1867 and 1868. They appear, he says, to be not uncommon, but frequent the small rivers rather than the Yukon. They are summer visitants, and build an unusually large nest, to which they return every season.

It is stated to be common on the coast of California; and, according to Lawrence, Xantus met with it at Colima, and Grayson on the Tres Marias. It is quite common about Mazatlan. In Central America it is stated by Mr. Salvin to occur abundantly on both coast-regions, being especially common about Belize, where it is believed to breed. In the Pacific it is said to occur only on some of the islands, as, for instance, on the Isle of Pines and the Exchequer group.

Being exclusively piscivorous, the Osprey is never found far from water, either near rivers or inland sheets of water, or else on the sea-coast; but the nest is not unfrequently placed at a considerable distance from the place where it seeks its finny prey, and I have frequently seen it carrying fish tolerably long distances from the water to its nest. When in New Brunswick, a pair of Ospreys usually passed over a shipyard where I was overlooking the men, on their way from the shores of the Bay of Fundy to their nest, which was situated at some distance in the forest; and I have several times fired at one with a rifle when it was carrying a heavy fish, and sent the bullet close enough to make it drop the fish, which I then secured. Usually they flew at a great altitude; but, as a rule, they seemed to pass the same way on their journeys to and from their nest. I have frequently seen the present species circling gracefully round in wide circles above the water in search of prey; and when it perceives a fish it plunges down like an arrow, after hovering for a moment as if to make sure, and dashes into the water, throwing up a shower of spray, and seems rarely to miss its aim. Having secured the fish, it emerges directly, and soon regains its former altitude by mounting in the air in a spiral direction; and,

so far as I could judge, it rarely strikes a fish unless it is close to the surface. Occasionally it will strike a fish too large to lift; and in such case, unless able to extricate its talons, it is dragged under the surface again and again until it is drowned. Professor Newton states that Mr. Lloyd records one having met with this fate; and Mr. Knox mentions a case in which the bird, having landed its prey, was unable to extricate its talons therefrom, and so fell a victim to the crook of a shepherd who had witnessed the capture. I well recollect, when collecting along the shore of the Bay of Fundy, just outside Musquash harbour, seeing an Osprey, after hovering a short time, strike a fish which it was unable to lift; and after being dragged beneath the surface time after time, and making every effort to release itself, it was at length carried out and disappeared. Unfortunately no boat was at hand; or I could, I fully believe, have secured both bird and fish. In a note received from Mr. Robert Collett, of Christiania, he says, "sometimes the Osprey strikes a fish of too large a size, and thus perishes in its attempts to secure it; and in one of our lakes a huge pike was caught which had still attached to its back the remains of an Osprey's skeleton."

The Osprey feeds on various kinds of fish. In New Brunswick I generally found that in the fresh water it fed on the red trout, and probably also on the large grey lake-trout, there called togue, and in the salt water on shad. Naumann states that it is especially fond of carp and trout; and Mr. Collett informs me that in Norway it feeds chiefly on trout (*Salmo eriox*, var. *fario*) and pike, as well as on bream and different species of the genus *Leuciscus*. It carries the fish lengthwise, and not crosswise, doubtless so as to avoid being impeded in its flight. Professor Newton says that one "in the Gardens of the Zoological Society of London, when a fish was given to it, was observed to seize it across the body, placing the inner and outer toes at right angles with the middle and hind toes, and, digging-in the claws, held the fish most firmly by four opposite points, not relaxing its hold or altering the position of the toes, but picking out the portions of flesh from between them with great dexterity."

The nest of the Osprey is placed either on a tree or else on a rock, according to locality; but, so far as I can judge, it nests in preference on trees, if in a wooded district. Mr. Collett informs me that in Norway it usually nests on trees, but in a bare treeless locality it places its nest on a rock or on the ground; and at Jæderen and in the Stavanger district, where there are no trees, it always nests on small islets and on large stones or rocks in the lakes. A nest he examined near Salsvand, on the Foldenfjord, which was placed on the top of a large pine, was constructed of sticks and lined with moss and lichens. The nest is usually a very bulky structure, the lower portion being very large. It is constructed of stout sticks tolerably closely worked together; and the cup, which is flat, is composed of moss. Mr. Wolley describes (Ooth. Wolleyana, i. p. 62) one from Sutherlandshire as follows:—"The nest was on the south-west side of a large stone, loose, or apparently so; and its level was on a line with the top of the stone. Below the stone was some turf and grass, and a little shrub growing. It seemed very compact, like an ants'; and at the top was much moss, but disordered as if not touched since last year. The landing appeared to be perfectly easy. The stone looked from the bank to be about five feet high. The nest seemed to be made of sticks, mixed up with fine turf-soil, and apparently a little heather amongst it." And one in a tree in East Bothnia was, he says (p. 66), "made of good-sized sticks, large at the top, lined with tree-hair and moss." With us in Europe, so far as I

know, the Osprey always nests singly; and it is somewhat remarkable that in America it should not unfrequently breed in communities. Messrs. Baird, Brewer, and Ridgway say (N.-Am. Birds, iii. p. 189):—"In some localities the Fish-Hawk nests in large communities, as many as three hundred pairs having been observed nesting on one small island. When a new nest is to be constructed, the whole community has been known to take part in its completion. They are remarkably tolerant towards smaller birds, and permit the Purple Grakle (*Quiscalus purpureus*) to construct its nests in the interstices of their own. Wilson observed no less than four of these nests thus clustered in a single Fish-Hawk's nest, with a fifth on an adjoining branch. It appears that the female alone undertakes the cares of incubation, the male supplying her with food during the time she is sitting; but when the young are hatched both parents cooperate in obtaining food for their offspring until they are able to cater for themselves."

The number of eggs deposited is usually three, but occasionally four. Mr. C. Sachse informs me that out of about eighty eggs sent to him by his brother from Ramuck, near Königsberg, in East Prussia, all are in clutches of three, excepting three clutches, which consist of four eggs each. These eggs were all taken between the 20th and 30th of April. He received, however, last year (1875) a clutch from near Berlin which were taken very late in the season. At Ramuck, Mr. Sachse adds, the Peregrine usually takes possession of the Osprey's nest the following year.

The eggs of the Osprey are subject to considerable variation. I possess a large series from various parts of Europe and North America, most of which are white, richly spotted and blotched with deep chestnut-red, and sparingly marked with a few purplish grey underlying shell-blurs or markings; but some have the ground-colour buffy white, the markings very large and close and blurred, not clearly defined. In some there is here and there a large blotch, the rest of the egg being comparatively sparingly blurred and blotched; and in one or two the deep-red blotches are so close as almost to hide the ground-colour. In size they vary considerably, the largest measuring $2\frac{2}{40}\frac{1}{40}$ by $1\frac{3}{40}\frac{8}{40}$ inch, and the smallest $2\frac{5}{40}$ by $1\frac{2}{40}\frac{4}{40}$, the normal size being about $2\frac{1}{40}\frac{6}{40}$ by $1\frac{3}{40}\frac{1}{40}$ inch. A very rich series of the eggs of this bird is figured by Professor Newton in the 'Ootheca Wolleyana.'

The cry of the Osprey is not loud or harsh; and it is by no means a noisy bird. Naumann compares its note to the syllables *kai*, *kai*, *kai*; and when alarmed it utters a note like *gegiekere*, or occasionally a harsh *krau*.

When in Norwich lately I looked over the splendid series of Ospreys in the Museum of that town, and fully agree with Mr. Gurney in considering that there is but one species of Osprey. In a letter received not long since from this gentleman he says:—"I believe that the Osprey is cosmopolitan, and that Mr. Sharpe is wrong in treating *P. leucocephalus* as distinct. I believe, with a sufficient geographical series, they would be found to run into each other so that no line could be drawn between them. Speaking generally, I think it will be found that the largest Ospreys are those inhabiting the Atlantic coasts of America, and that they become smaller as you travel eastward from there, until, when you get nearly round the world, you find the smallest in Australia and on the Pacific coast of America." In these views I generally concur; but I cannot help thinking that the difference in size is frequently individual and not climatic. I have, for instance, a male from Skåne, in Sweden, which is scarcely larger than the small Australian

form; for it measures only—culmen 1·6, wing 17·2, tail 8·05, tarsus 2·15; and Mr. Sharpe states that a specimen (of the form he treats as a distinct species under the name of *Pandion leucocephalus*) killed by Mr. Wallace in New Guinea had the wing 17 inches long.

As regards the American bird, which Mr. Ridgway keeps distinct under the name of *Pandion haliaëtus*, var. *carolinensis*, I cannot agree with him that it is advisable to separate it from our European bird. He says that "in eight out of twelve North-American adult specimens there is but the slightest amount of spotting on the breast, in two of those none whatever, and in four there is just a trace of these spots;" and he adds that, if any European birds occur with the breast immaculate, he will at once waive all claims to distinctness for the American bird. I observe that in European examples the marking on the breast varies extremely; and in the male above described the markings are very faint indeed, as will be seen by the Plate. Dr. Severtzoff informs me that in Turkestan he has obtained "three examples which had the breast white, with only a few small lanceolate spots, scarcely visible."

The specimens figured are:—on the one Plate an adult male, with the breast but slightly marked, and an adult female with the marking strongly developed; and on the second Plate a young female and a nestling,—all four being the specimens above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂. Skane, Sweden, September 18th, 1874 (*Meves*). *b*, ♂. Southern France, December (*Schlüter*). *c*, ♀. Sarepta, October (*Möschler*). *d*, ♂ *ad.* Astrachan, April. *e*, *pull.* Astrachan (*W. Schlüter*). *f*, ♀. Gwadar, Baluchistan, December 1871 (*W. T. Blanford*).

E Mus. Howard Saunders.

a, ♂. Malaga, Spain, December 4th. *b*, ♀. Malaga, November 15th, 1872 (*H. S.*).

E Mus. Norv.

a, ♀ *ad.* Tangier (*Favier*). *b*, ♂, *c*, ♀ *ad.* Natal (*Ayres*). *d*, ♂ *ad.* India (*Warwick*). *e*, *f.* Amoy, China (*R. Swinhoe*). *g*, *ad.* Australia (*Warwick*). *h*, ♀, *i*, ♂ *ad.* Sydney (*Strange*). *k*, ♂. New Caledonia (*Verreaux*). *l*, *juv.* Canada (*Hadcraft*). *m.* Gallina, Mississippi (*Dyson*). *n.* Monterey (*A. S. Taylor*). *o*, *juv.* Honduras (*Calvert*). *p*, *juv.* Jamaica (*Rev. J. M. Phillips*). *q*, *ad.* St. Croix (*A. Newton*).

Order III. STEGANOPODES.

Family PELECANIDÆ.

Genus PHALACROCORAX.

Phalacrocorax, Brisson, Orn. vi. p. 511 (1760).
Pelecanus apud Linnæus, Syst. Nat. p. 216 (1766).
Procellaria apud Müller, Zool. Dan. Prodr. p. 18 (1776).
Carbo apud Meyer, Taschenb. deutsch. Vogelk. ii. p. 576 (1810).
Halieus apud Illiger, Prodr. Mamm. et Av. p. 279 (1811).
Hydrocorax apud Vieillot, Nouv. Dict. viii. p. 83 (1817).
Cormoranus apud Baillon, Mém. Soc. Roy. d'Emul. d'Abbev. 1833, p. 77.
Grauculus apud G. R. Gray in Dieff. Trav. ii. App. p. 201 (1843).
Gracalus apud G. R. Gray, Voy. Ereb. & Terr. Birds, p. 20 (1844).
Microcarbo apud Bonaparte, Cat. Parzud. p. 10 (1856).

Until quite recently the birds belonging to the family Pelecanidæ have been ranged with the water-birds, on account of their having webbed feet; but it has now been clearly shown that they must be placed between the Accipitres and the Herodii, where I have accordingly inserted them. The first genus in this family, *Phalacrocorax*, is represented in the Palæarctic, Ethiopian, Oriental, Australian, Nearctic, and Neotropical Regions, four species being found within the limits of the Western Palæarctic Region.

The Cormorants frequent the sea-coast, as well as inland sheets of water, and are especially partial to lakes and ponds which are surrounded by high trees. As they feed entirely on fish, which they capture with great dexterity by diving, they are always found near and spend most of their time on the water. They swim with great ease and swiftness, sink themselves in the water when alarmed, and dive extremely well. They perch on rocks and trees, sitting very erect, walk very little, have a quick, steady, and even flight, and are generally very shy and cautious. They construct large, bulky nests of sticks lined with grass and weeds, which they place on a tree or rock, and lay white eggs, the surface being chalky, and the shell underneath bluish.

Phalacrocorax carbo, the type of the genus, has the bill about as long as the head, straight, slender, compressed, the gape extending far beyond the eyes; ridge of the upper mandible convex, separated by narrow grooves from the sides, which are scaly; unguis narrow, decurved to a point, thin-edged; under mandible straight, scaly, with the tip obliquely truncate; face in front bare, the mouth wide and dilatable; nostrils obliterated in the adult, open in the young; wings rather short but broad, the second and third quills longest; tail rather long, rounded, the feathers with very strong shafts; feet short, stout, placed far behind; the tibia full feathered to the joint; tarsus short, reticulated; toes webbed, the outer one longer, the inner short; claws strong, curved, that on the middle toe pectinate.



CORMORANT

PHALACROCORAX CARBO.

PHALACROCORAX CARBO.

(CORMORANT.)

Phalacrocorax, Briss. Orn. vi. p. 511, pl. xlv. (1760).
Pelecanus carbo, Linn. Syst. Nat. i. p. 216 (1766).
Procellaria pelecanus, Müll. Zool. Dan. Prodr. p. 18 (1776).
Le Cormoran, Buff. Hist. Nat. Ois. viii. p. 310, pl. xxvi. (1781).
Pelecanus sinensis, Lath. Ind. Orn. Suppl. p. 70 (1801).
Carbo cormoranus, Meyer, Taschenb. deutsch. Vogelk. ii. p. 576 (1810).
Halieus carbo (Linn.), Illiger, Prodr. Mammal. et Av. p. 279 (1811).
Phalacrocorax carbo (L.), Leach, Syst. Cat. M. & B. Brit. Mus. p. 34 (1816).
Hydrocorax carbo (L.), Vieill. Nouv. Dict. viii. p. 83 (1817).
Hydrocorax sinensis (Lath.), Vieill. tom. cit. p. 86 (1817).
Phalacrocorax novæ-hollandiæ, Steph. in Shaw's Gen. Zool. xiii. pt. 1, p. 93 (1825).
Phalacrocorax sinensis (Lath.), Steph. ut suprà (1825).
Carbo glacialis, C. L. Brehm, Vög. Deutschl. p. 817 (1831).
Carbo arboreus, C. L. Brehm, op. cit. p. 818 (1831).
Carbo subcormoranus, C. L. Brehm, op. cit. p. 819 (1831).
?*Carbo ater*, Less. Traité d'Orn. p. 604 (1831).
Cormoranus crassirostris, Baill. Mém. Soc. Roy d'Émul. d'Abbeville, 1833, p. 77.
Phalacrocorax medius, Nilss. Skand. Fauna, Fogl. ii. p. 478 (1835).
Phalacrocorax carboides, Gould, Proc. Zool. Soc. 1837, p. 156.
Carbo albiventris, Tickell, Journ. As. Soc. Beng. xi. p. 463 (1842).
Halieus cormoranus (Mey.), J. F. Naumann, Nat. Vög. Deutschl. xi. p. 52 (1842).
Graucalus carboides (Gould), G. R. Gray, in Dieff. Trav. ii. App. p. 201 (1843).
Gracalus carboides (Gould), G. R. Gray, Voy. Ereb. and Ter., Birds, p. 20 (1844).
Graculus sinensis (Lath.), G. R. Gray, Gen. of B. p. 667 (1845).
Graculus medius (Nilss.), G. R. Gray, ut suprà (1845).
Graculus novæ-hollandiæ (Steph.), G. R. Gray, ut suprà (1845).
Graculus carboides (Gould), G. R. Gray, ut suprà (1845).
Phalacrocorax leucotis, Blyth, Cat. B. Mus. As. Soc. p. 298 (1849).
Carbo filamentosus, Temm. & Schl. Fauna Japonica, Aves, p. 129 (1850).
Carbo capillatus, Temm. & Schl. op. cit. pls. 83, 83 B (1850).
Phalacrocorax glacialis, C. L. Brehm, Vogelfang, p. 360 (1855).
Phalacrocorax arboreus, C. L. Brehm, ut suprà (1855).
Phalacrocorax subcormoranus, C. L. Brehm, ut suprà (1855).
Phalacrocorax humilirostris, C. L. Brehm, ut suprà (1855).
Phalacrocorax brachyrhynchos, C. L. Brehm, ut suprà (1855).
Phalacrocorax capillatus (Temm.), Bp. Consp. Gen. Av. ii. p. 168 (1857).

Phalacrocorax carbo major, Nilss. Skand. Faun. Fogl. ii. p. 515 (1858).
Phalacrocorax carbo medius, Nilss. ut suprà (1858).

Bailliare-bodhain, *Sgarbh-buill*, Gaelic; *Grand Cormoran*, French; *Corvo marinho*, Portuguese; *Cuervo marino*, Spanish; *Cormorano*, *Marangone*, Italian; *Margun*, Maltese; *Gharrad*, Moorish; *Kormoran*, *Scharbe*, *Wasserrabe*, German; *Aalscholver*, *Schollevaar*, Dutch; *Kormoran-Skarv*, Danish; *Hiblingur*, Færoese; *Okaitsok*, Greenlandic; *Skarfr*, *Dilaskarfr*, Icelandic; *Skarv*, *Aalekraake*, Norwegian; *Hafstjäder*, *Ålkråka*, *Storskarf*, Swedish; *Kalakorppa*, *Haikara*, Finnish; *Baklann*, *Baklann bolchoi*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 927; Werner, Atlas, *Palmipèdes*, pl. 64; Kjærb. Orn. Dan. taf. 50, Suppl. taf. 32; Frisch, Vög. Deutschl. taf. 187, 188; Fritsch, Vög. Eur. taf. 53. figs. 1, 5; Naumann, Vög. Deutschl. taf. 279; Sundevall, Svensk. Fogl. pl. 55. figs. 1, 2; Gould, B. of Eur. pl. 407; id. B. of G. Brit. v. pl. 52; Schlegel, Vog. Nederl. pls. 324, 325, 326; Temm. & Schl. Fauna Japon. pls. 83, 83 B; Audub. B. of Am. pl. 415.

Ad. ptil. æst. niger viridi-cæruleo nitens: nuchâ cristatâ: colli lateribus striis parvis filamentosis albis ornatis: plagâ albâ utrinque postoculari descendente, subter gulam conjunctis: dorsi lateribus scapularibus et tectricibus alarum viridi-æneo-fuscis vix griseo tinctis, plumis viridi-nigro marginatis: caudâ et remigibus nigris vix cinereo tinctis: plagâ hypochondriacâ magnâ albâ: rostro fusco, versus basin flavido-albido: gulâ nudâ flavâ, regione ophthalmicâ nudâ viridi-fuscâ, iride viridi: pedibus nigris.

Ad. ptil. hiem. plagâ subter gulam albidâ, capite et collo striis filamentosis numerosis albis ubique ornatis, corpore viridiùs nitente.

Adult in summer (Færoes, 2nd April). Chin and sides of the head in a broad band skirting the bare part at the base of the bill white, rest of the head, neck, and entire underparts rich glossy purplish black, in some parts with a faint bottle-green tinge; feathers on the hind crown and nape elongated; a pure white patch on each thigh, and a few straggling hair-like white lines still remain on some parts of the upper neck; back, scapulars, and wing-coverts bronze-green with a greyish tinge, margined with greenish black; a line along the centre of the back, the lower back, and the rump uniformly coloured like the underparts; tail-feathers black close to the shaft, but otherwise greyish black, the shafts greyish blue at the base and becoming black towards the tip; quills glossy black with a greyish tinge; beak dusky brown, but yellowish white at the base; gular sac yellow; bare space round the eye greenish brown; iris grass-green; legs and feet black. Total length about 34 inches, culmen 3·6, gape 4·1, wing 13·5, tail 7·0, tarsus 2·7.

Adult Female. Resembles the male, but is somewhat smaller in size.

Adult Male in winter (Orkney). Differs from the male in winter in having the band across the throat dull white, the general tinge of colour is rather more of a bottle-green and less of a purplish green, and the head and neck are covered with very slender white filamentous plumelets.

Young. Upper parts generally dark brown, the feathers on the back narrowly margined with blackish brown and tinged with bronze; fore part of the neck brownish white marked with dark brown; under-

parts dull white slightly marked with brown; wings and tail dark brown; bill dark brown above and pale brown below.

THE Cormorant inhabits Europe and Asia, in suitable localities, ranging down to South Africa, Australia, and New Zealand; and in America it frequents the Atlantic coasts from Hudson's Bay down to Georgia and the Carolinas.

In Great Britain this bird is widely distributed, being met with on most parts of the coast suitable to its habits, but is more numerous in the north than in the south. It is, Mr. Cecil Smith informs me, by no means common in Guernsey, as the Shag, which is there always called "Cormorant," almost entirely takes its place in all the islands. It is, however, resident along the south coasts of England; but Mr. Cecil Smith says that it is only a chance or occasional visitant to Somersetshire, and the few that do occur on the coast or inland are usually in immature dress. On the east coast of England it is rarer than in former days. Sir Thomas Browne speaks of the Cormorant breeding on trees at Reedham in his time, and adds that from there King Charles the First was wont to be supplied; and Mr. Stevenson informs me, "even within a comparatively recent period Cormorants have nested occasionally in Suffolk in the trees surrounding the Fritton Decoy; but now it occurs only as a straggler in winter, and then chiefly in immature plumage. The neighbourhood of the coast and the larger broads is their chief resort; but it has been seen as far inland as the Yare, above Norwich." Formerly it used to nest on the rocks at Flamborough, on the Yorkshire coast; but it has been driven away by the ceaseless persecution of summer excursionists from the neighbouring watering-places. Mr. Cordeaux says that he has lately seen it off the Headland in July; but the nearest breeding-station to the Humber is on the Farn Islands, where, according to Mr. Hancock, it is common, and resident.

Referring to its presence in Scotland, Mr. Robert Gray writes (B. of West of Scotland, p. 454):—"The well-known figure of this conspicuous bird is a never failing accessory to the coast scenery of many districts of the mainland of Scotland, especially the south-western counties. In Ayrshire and Wigtonshire it is much more common than its ally, the Green Cormorant; and in these counties it is found breeding on rocky precipices overhanging the sea, where it occupies separate ledges, as well as on islands in inland lakes, at a distance of many miles from the coast. There is a large breeding-colony on Loch Moan, in Ayrshire—a place but little visited, and distinguished for nothing but these Cormorants and the sterile scenery by which they are surrounded. In the breeding-season of 1867 this loch was visited by a fishing party, who, finding nothing in the loch itself, every fish having been devoured by the birds, launched a boat they had brought across the hills, and proceeded to the island, where they built a pyramid of Cormorants' eggs, which they had no difficulty in gathering, to a height of two or three feet, and smashed the entire lot with heavy stones. One of the party, an officer in the 33rd Regiment, informed me that, though the eggs were not counted, he was certain of more than a thousand having been destroyed. A similar colony existed a few years ago on the lochs of Mochrum and Drumwalt, in Wigtonshire. In 1867, when visiting these lochs, I found the numbers of the Cormorants greatly diminished; and I have since been informed that only a few pairs are now to be found nesting there. Their unwelcome presence had been too much for the resident keeper's goodnature; and, indeed, it would be a strong liking for Cormorants that would tolerate even

the temporary visits of several hundreds of these feathered poachers where the fishing is supposed to be 'preserved.' In the autumn of 1870, after the young birds had left the district, I counted nearly fifty groups of these gaunt creatures on the coast between the point below Sinniness and the village of Port William, a distance of eight or ten miles; there were from fifteen to twenty in each company; and in some instances the birds were sitting drying their wings within thirty yards of the public road. I saw no Green Cormorants among them; nor could I discern a single bird of either species on the water, all being in a state of rest. A very large proportion of these Cormorants appeared to be birds of the year; but I could not learn with certainty where they had been bred. From their extraordinary numbers within a comparatively limited space, it was evident that they had located themselves on a good fishing-ground. Several times I observed two or three birds rise together as I drove along the road which skirts the shore, and, after attaining to a considerable height, steer in a straight line across the hills; and I concluded they were flying to some favourite inland roosting-place. On the Ayrshire coast there are several breeding-stations on the line of rocks overhanging the sea between Ballantrae and the entrance to Loch Ryan. The colonies which occupy these nesting-places are very conspicuous when viewed at sea.

"In the Outer Hebrides the common Cormorant is much less numerous than on the south-western mainland, its place there being to a great extent occupied by the next species [*Ph. graculus*]. It frequents various caves on the east side of the Long Island from Barra to Lewis, and is also found on the Haskeir rocks. Within the circle of the inner islands it is found breeding on some parts of the coasts of Skye, Mull, and Islay, likewise in Rum, Eigg, and Canna. Mr. Graham informs me that it is frequently met with in Iona and Staffa, though it is by no means so common as the Green Cormorant. On all these islands it breeds apart from its ally, and invariably perches at a high elevation on the rocks."

In Shetland the Cormorant is resident and common, though less so than the Shag; but it is more often seen on fresh water than this latter species. In Ireland it is numerous and sedentary in suitable localities.

In Greenland it is said to be tolerably abundant; and Holböll states that it breeds from the Godhaab fjord northward as far as he went. It has also been observed on the east coast. According to Faber it breeds only in the north of Iceland, and is a winter visitant in the south; but Herr Preyer says that it breeds on the Vestmannaeyjar. Professor Newton remarks, it is certainly less often seen in Iceland than the Shag, but in the Færoes it is common and resident. Mr. Robert Collett informs me that the Cormorant breeds on the Norwegian coast from Stavanger to the Varanger fiord, most numerously above the arctic circle, nesting always in the cliffs, and never in trees. During passage it penetrates up the fiords, and is even seen occasionally on rivers in the interior.

In Sweden, according to Nilsson, this bird is found in autumn and winter on the southern coast, and breeds on the Baltic coasts and islands at least as high up as Blekinge; but it does not breed in Finland, only occurring there on passage. Dr. Palmén states that it nests in Lapland; and he cites numerous instances of its occurrence in various parts of Finland down to Helsingfors and Ekenäs. Sabanäeff says that the Cormorant breeds numerously on the coasts of the White Sea, and is found in Central Russia on passage, nesting also on the coasts of the

Black Sea and Sea of Azoff; and Artzibascheff states that it is common on the Sarpa, but especially so at the mouth of the Volga, where its numbers are almost beyond conception.

In Poland a few used to nest near Warsaw about forty years ago, but now it is of accidental and rare occurrence. In North Germany, however, it is tolerably common, and nests in many localities, in spite of endeavours to keep its numbers down.

Formerly, Mr. Collin writes (Skand. Fugl. p. 708), the Cormorant used to breed in several forests in Denmark, especially near the sea, as, for instance, at Slien, Holdnæs, Skanderborg, on Lolland and Falster, at Nakke-bölle, in Fyen, Karrebäksminde, and Grevinge, in Seeland, &c.; but now, being so destructive to the forests and fisheries, it has been nearly everywhere exterminated. He gives particulars of a few localities where it still breeds in spite of every effort in most places to drive it off. Mr. Benzon informs me that it arrives in Denmark about the middle of March, and leaves late in August; but stragglers are met with throughout the winter in places where the water remains open. He remarks that small colonies are to be found nesting here and there in the large forests on the coast, especially near a fiord or bay. Mr. H. M. Labouchere informs me, "at one time the Cormorant used to breed in large numbers on a piece of land near Rotterdam, which from this fact was called Schollevaars Eiland (Cormorants' Island); but since the water surrounding this place was drained a few years ago, and the woods on it were cut down, they have quite disappeared from those parts and are now only found in a few localities. I have, however, often observed them during the breeding-season on the meres near Naarden and other parts of the country, and have no doubt they still breed in several of the less-populated parts." It is common on the coast of Belgium and at the mouth of the Scheldt throughout the greater part of the year, and occasionally visits the inland rivers and sheets of water. In France it is to some extent migratory; but numbers breed along the cliffs from Boulogne to Dieppe, on the coast of Brittany, and near Biarritz. M. Hardy remarks that every year individuals in immature plumage may be found breeding near Dieppe. It is said to be common on the coast of Portugal; and both Colonel Irby and Mr. Howard Saunders state that it is generally distributed along the coast and on the rivers of Spain in the winter.

Passing eastward again, I find it recorded by Bailly as found in autumn and winter on the lakes of Savoy; but only young birds, and never adults, are seen there. In Italy, according to Salvadori, it is tolerably numerous; but whilst resident in some parts, it occurs in others principally in autumn and winter. In Tuscany it breeds on trees in several of the large swamps, and nests also in Sicily, and on rocky parts of Sardinia, where, Mr. Brooke writes (Ibis, 1873, p. 345), it is "extremely common. One morning early in March I counted forty-three in one flock, flying like wild geese from the sea to feed during the day on the stagno of Scaffa. Many of them had the white spot on the hip." In Malta, according to Mr. C. A. Wright (Ibis, 1864, p. 154), the Cormorant is "not uncommon, but is not very regular in its visits. Generally appears in the winter months. I have seen it, however, in spring, summer, and autumn."

In Southern Germany it is not rare. "Every spring," Dr. Fritsch writes (J. f. Orn. 1872, p. 373), "small flocks of these birds, which are very destructive to fish, come to Bohemia. They were plentiful in 1836 and 1846 near Pardubic; and there is no doubt they would settle here if allowed to do so. In old game-lists they figure under the name of 'Wasserrabe;' and a premium of eighteen kreutzers was paid per head. In the spring of 1863 a flock of fifteen

appeared near Kamenic, not far from Jicin. According to Mr. Lokaj a strange occurrence happened two years ago near Rusin, not far from Prague. During the night a fire broke out in this village, when two Cormorants, which probably had been roosting in the Sternthiergarten close by, appeared, flying in circles over the fire, one of them falling at last into it; and the other dropping close by, was caught alive."

In Transylvania, Messrs. Danford and Harvie-Brown write (Ibis, 1875, p. 431), it is "rare, but is sometimes found on the larger rivers in winter. Herr Buda Ádám killed one near Russ, on the Strell, in August; and a young bird was shot near Hátzeg. The specimen in the Klausenburg Museum is from Felvincz. On the 24th June, 1867, Herr Ottó shot an adult female at Felvincz; and again, on the 24th July of the same year, seven were seen near Klausenburg, and two of them were shot."

It is found on the Danube, and breeds numerously, Messrs. Elwes and Buckley state, on the Bosphorus and Sea of Marmora, as also, according to Dr. Krüper, in Greece and the Cyclades. Captain Sperling states that in December when Duck-shooting at Petala, on the coast of Greece, a large flock of not less than two thousand Cormorants passed over his head; and Lord Lilford informs me that he found it by no means uncommon on the coasts of Epirus in winter.

It is found on the coast of Asia Minor; and, Canon Tristram says, is very numerous on those of Palestine, and visits the mouth of the Jordan regularly, where he met with it sitting on a "snag," and watching for the stupefied fishes. In Egypt, according to Captain Shelley, it is very plentiful; and he believes that it breeds in the Fayoom; but Von Heuglin remarks that it disappears from the Nile in March and April. He says that it visits the lagoons of Lower Egypt in large flocks, and in Central and Upper Egypt it is extremely numerous, especially amongst the rocks of Minieh, Farschut, and Abulfeda; but he did not observe it south of Assouan, though Brehm states that it straggles to the Sudan. In December and January he saw flocks of Cormorants at Aïn Musah, in Arabia Petræa. According to Loche it is resident in the large lakes of Algeria. Mr. Salvin observed several in the lagoon of El Baheira; and Favier (*fide* Colonel Irby, Orn. Str. Gibr. p. 207) states that it is found near Tangier from December to February, and frequents the coast, lakes, and rivers, where it is not uncommon. It ranges at least as far south as Damara Land, where, according to Mr. Andersson, it is not rare in Walwich Bay; and Mr. Layard believes that he has seen it in Simon's Bay in breeding-dress; but the species included by him (B. of S. Afr. p. 380) under the name of *Graculus carbo* proves on further examination to be *Graculus lucidus*, Licht., a distinct species from our European Cormorant. Mr. Barratt, however, remarks (Ibis, 1876, p. 214) that he shot an example of *Phalacrocorax carbo* in the Orange Free State.

In Asia the present species ranges eastward to Japan, and south to Australia and New Zealand.

Major St. John states that the common Cormorant abounds on the lakes and rivers of Southern Persia; and, according to Mr. Blanford (E. Pers. ii. p. 298), it is "excessively abundant on the Makrán coast. Every evening long processions of Cormorants, flying at a considerable elevation, used to pass from one to the other of the bays on each side of the isthmus on which the village is built. I heard that all disappeared, with most of the Gulls, Pelicans, &c., about March. Cormorants are very abundant, too, on the Caspian." Mr. Hume (Stray Feathers, i.

p. 289) found it "abundant in Sindh. Small parties were occasionally noticed the whole way down the rivers Jhelum, Chenah, and Indus, from Khelum to Kurrachee;" and he saw a few also at the Muncher lake, and shot a male in almost full breeding-plumage at Muscat. Dr. Jerdon writes (B. of India, ii. p. 861), "the large Cormorant of Britain is found throughout India, is more rare towards the south, and is there chiefly found in rivers that run through forest and hilly ground, but occasionally occurs in large tanks in the open country. In the north of India it appears more common, especially in the well-watered province of Bengal, where it chiefly frequents rivers, and on rivers within the Himalayas. It is rather strange that it is not included in Gray's 'List of Hodgson's Nepal Birds.' It is very generally found in pairs or singly, occasionally four or five together. I am not aware if it breeds in this country; but it probably does so in suitable spots." Mr. Ball records it from Chota Nagpur, Captain E. A. Butler from Mount Aboo and Northern Guzerat; and in Eastern Turkestan, Mr. J. Scully (Stray Feathers, iv. p. 205) writes, "this Cormorant is, I believe, a permanent resident in Kashgharia—in the plains. The first specimen was obtained on the banks of the Yarkand river, near Tarim Langar. In the beginning of August I found these birds quite common at Tungtash, near Karghalik. They were then nearly always seen in parties of five, sitting on the top of a mud cliff—often thirty feet high—immediately overlooking the water below, one of the party acting as sentinel." In Burmah, Mr. Oates says (Stray Feathers, v. p. 169), it "breeds in vast numbers in the Myilkyo swamp, placing its nest in low, apparently dead, trees which rear their heads fifteen or twenty feet above the water."

In Siberia the Cormorant is found during the summer in the south-eastern portions of the country. Von Schrenck says that it is to be met with not only on the sea-coast, but on the Upper Amoor and Ussuri rivers; and Dr. Radde states that directly the ice on the rivers breaks up in the spring the Cormorants appear in great numbers, and he found them common on the Selenga and Uda rivers, and breeding on rocks in two places on the western Baikal shores, viz. on the Baklan rock and about twenty versts above the village of Goloustnaja. On the Upper Amoor the Cormorant is rare. Mr. Taczanowski remarks that it is numerous in Dauria, and that examples from the Argun river have the heads whiter than is the case with European birds.

In Mongolia, Colonel Przevalsky writes (in Rowl. Orn. Misc.), large numbers were seen on Lake Dalai-nor in March, and in the Hoang-ho valley in April. At Koko-nor the first appeared on the 12th March, and soon became abundant; but very few pairs remained there to breed. Early in March they arrived at Lake Hanka, and were numerous about the middle of that month on the Sungatch. Not being molested by man, the Cormorants were very tame in Mongolia and the Ussuri country. Mr. Swinhoe found it throughout China and Formosa, but in the south only in the winter; and, according to Père Armand David, it inhabits the east coasts of Asia up to Kamtchatka, and is often seen on the rivers and lakes in the interior of China and Mongolia. The Chinese use tamed Cormorants for fishing, and hatch their eggs under hens. Messrs. Finsch and Hartlaub say that they have compared examples from Castries Bay, on the east coast of Mantchuria, which were identical with European birds. It is found in Japan, where it was obtained by Siebold and Whitely, and ranges southward to Australia and New Zealand. Professor Schlegel has examined specimens from Sumatra, Australia, and New Zealand, which he unites with our European species without hesitation, those from Sumatra being moderate in size,

and those from Australia and New Zealand rather large, but smaller than American examples, not differing, however, at all in plumage.

In Australia, Mr. Gould writes (B. of Austr. ii. p. 489), "though enjoying a wide range over the southern part of the country, it is nowhere so abundant as in Tasmania. In this island it not only inhabits all the bays and inlets of the sea, but it also ascends the large rivers even to the lakes in the middle of the island, on several of which it breeds. In Western Australia it is tolerably abundant at King George's Sound; it also ascends the Swan, and is sometimes observed far up the Murray In South Australia and New South Wales it frequents similar localities." Mr. Buller considers that the Australian and New-Zealand Cormorant can be separated specifically from *Phalacrocorax carbo*; but I quite agree with Professor Schlegel and Dr. Finsch that they are identical. In New Zealand, according to Mr. Buller, this species is very common on the coasts and within the mouths of the tidal rivers.

In the Nearctic Region the Cormorant is found only on the Atlantic coasts from Hudson's Bay and Labrador down to those of Carolina and Georgia, penetrating even, though rarely, into the interior as far as the Missouri river, breeding in the northern portions of its range, and occurring in the south in winter. American examples all run large in size; and one I obtained in the Bay of Fundy measures—culmen 3·45 inches, gape 4·15, wing 14·4, tail 8·0, tarsus 3·0, being thus, even for an American specimen, a large bird. In Europe, however, specimens vary very greatly in size, even from the same localities, those from the north, however, being as a rule considerably larger than those inhabiting southern latitudes.

Though more frequently seen on fresh water than its congener the Shag, the Cormorant is more especially a sea-bird; and with us in England it is, as a rule, found on the sea-coasts, and only exceptionally on the rivers and fresh water. Voracious to a degree, it is a terrible scourge in places where fish are preserved, and a single pair will soon clear a small loch of fish if allowed free access to it without being disturbed. In the Bay of Fundy I procured a fine old male, out of which I took twelve good-sized herrings, all in a tolerable state of preservation; and it is somewhat remarkable that it had not attained the summer dress, though it was then early in May. I used to see the Cormorants sitting perched on the pinnacles of the rugged cliffs, frequently with their wings and tails spread out as if to dry themselves in the sun; and I generally observed that they resorted to the same resting-places. The Cormorant swims extremely well, and dives even better, trusting to its swiftness under water for a supply of food; and when gorged it will retire to some favourite resting-place on a rocky point, and sit quietly until it has digested its meal, which, as a rule, is a very heavy one. When fishing it appears almost always to swim with its head under water, and when diving glides quietly under the surface without making a heavy plunge. It is extremely wary and vigilant, and, when fishing anywhere near the shore, always keeps a bright look-out; and at the least sign of danger it will gradually sink its body in the water until all but the head and upper part of the neck is submerged. Its flight is direct and tolerably swift; but it rises from the water with some difficulty, striking the water with its wings and feet for a short distance before it gets fairly on the wing. When passing from place to place the Cormorants usually fly in strings at no great altitude above the water. They alight abruptly both on the water and on land, and walk with difficulty and clumsily. The present species feeds on fish of various kinds, both freshwater and sea-fish—such as herrings, sprats, and other fish of

not too large a size, trout, carp, bream, and especially eels, for which last fish it evinces a great partiality. The Chinese have long used Cormorants for fishing, and have them in excellent training; and in England they have also been used for the same purpose; and even now Mr. F. H. Salvin, the well-known falconer, keeps trained Cormorants. Pennant relates that he had a cast of Cormorants, one of which was presented to him by Mr. Wood, Master of the Cormorants to Charles I. When taken out to fish the birds have a collar round their neck, which prevents them swallowing the fish they catch; and when they have caught a sufficient quantity the collar is taken off and they are allowed to fish for themselves.

A very good account of a Cormorant in a state of domestication is given by Dr. Saxby (B. of Shetl. pp. 316–318) as follows:—"The Cormorant is very easily domesticated, and when treated with kindness will become exceedingly docile, exhibiting a very high degree of intelligence, and an amount of affection scarcely to be expected from a bird which in its wild state is remarkable for its extreme shyness of man. Some years ago a very young male was taken from one of the North Skerries and brought to Halligarth, where he soon became a most interesting pet. At first he required careful feeding; for it was some weeks before he became aware that opening his bill was the necessary preliminary to every meal. He would appear eager for food, and, uttering the usual peculiar cry, would strike at whatever was offered him, but with his bill closed; and in this manner he would have starved, but for human aid. Afterwards he caused but little trouble; but when the Ducks were fed he would rush boldly in among them, appropriate any thing in the shape of fish or flesh that happened to suit his fancy; but he never would eat salted food. Sometimes, also, when he saw a boy coming to the house with fish he would waylay him, and, if no contributions were then offered, he would speedily settle the matter by helping himself. One day, when food was scarce and he had been fasting for many hours, I happened to pass by carrying a number of Starlings, one of which I tossed at him, but scarcely with the expectation that it would be accepted. However, he caught it cleverly before it could reach the ground, and the next instant it disappeared down his capacious throat. Another followed, and was treated in the same way; then more, until no less than five had been thus disposed of. This number seemed to satisfy him; and, the whole neck being enormously distended, it was with difficulty that he waddled away to his favourite corner of the coal-shed, where I left him sitting, face to the wall, upon a lump of coal, the legs of the last Starling still projecting from the corner of his mouth. After this a bird was always a favourite morsel, and he would follow me for a long distance when I happened to be carrying a gun. Once I gave him, for a single meal, two Buntings, a Twite, a Sparrow, two Snow-Buntings, and a Ringed Plover; and even then he followed me for more. Birds, fish, and mice were always swallowed head foremost. During the first two years he kept almost entirely to the ground, only occasionally sitting upon a stone or low wall; but afterwards the roof of the house was preferred, from which elevated position he used suddenly to pounce down, either to rob a fish-basket or to scatter a company of feeding Ducks. But this was merely as a diversion, not as a necessity; for from the time of his first taking up his position on the roof he also began regularly to procure his own meals, flying to the voe for that purpose, and after remaining there for an hour or two, returning to his former station by the chimney. He never showed any desire to escape, but, on the contrary, he became more and more attached to his human friends. Strangers who attempted to handle him ran the

risk of becoming acquainted with the sharpness of his mandibles, and of being scared by the unearthly croaking which always accompanied the bite. Being one of his especial friends, I was permitted to stroke and handle him with impunity, and he would even fly several hundred yards to meet me when I called. The kitchen-fire was his great delight, and he would bask near it for hours; but at such times it was imprudent to leave either fish or flesh within his reach. Once he carried off a newly skinned rabbit; and at another time he attacked a living Duck, and even succeeded in swallowing the head and part of the neck before a rescue could be effected. He would sometimes extend his explorations beyond the kitchen, wandering through the passages as calmly as if the house were his own, but always betraying himself by the loud flap, flap of his great webbed feet upon the flags. For about the first year of his life the iris of the eye was of a brownish colour; then it became pale bluish green, and towards the end of the second twelve-month bright emerald-green. During the third year he rapidly acquired his adult plumage; but just as this was approaching its perfection he was unfortunately killed by an old half-blind dog, which in former days had been celebrated for its address in seizing and killing wounded Cormorants."

The Cormorant breeds either in cliffs and almost inaccessible rocks or else in trees. When placed on a rock the nest is usually constructed of sticks and seaweed, and when on trees it is a tolerably large and stout structure of sticks and twigs lined with grass and weed. Mr. Benzon informs me that in Denmark it usually builds on oak or ash trees, breeding in colonies so close together that as many as forty to fifty nests have been counted on one large tree. Both male and female assist in collecting the materials for the nest, as also in incubation; and the eggs, four in number, are deposited late in April or in May. The birds are by no means cleanly; and by the time the young are hatched and ready to leave the nest it is extremely offensive, being plastered all round with dung. The eggs are rather elongated in form, bluish white in colonr, and are closely incrusted with an irregular layer of a white chalky substance. Those in my collection vary from $2\frac{9}{40}$ by $1\frac{1}{2}$ to $2\frac{16}{40}$ by $1\frac{23}{40}$ inch.

In a letter from my friend Dr. Kütter, written just ten years ago, he gives some interesting notes respecting a visit he made to a breeding-place of the Cormorants in Posen, which I translate as follows:—"In May I visited the breeding-place of the Cormorants and Herons; and I can assure you that it gave me the greatest pleasure, and I have seldom seen any thing that made more impression on my mind. On a small island in the Klossowski lake (North Posen) covered with lofty old fir and oak trees, nested closely packed together about 600 to 800 pairs of these birds, the Cormorants being far the more numerous, though they have only settled there during the last six years, and have by degrees pushed out the formerly so much more numerous Herons. Many of the birds were still sitting; the young of the others were hatched and sat on the edge of the nest. The noise and tumult of the thousand voices was deafening, as all seemed crying out at once, the old ones quarrelling, the young singing out for food, all hoarse and unmusical; and above all one could hear the rushing sound of the wings of the birds as they came and went. Now and then I could hear the cry of a Peregrine (of which bird I found two nests on the island), which was circling round high in the air, and the shrill whistle of a Kite (*Milvus migrans* or *regalis*, which were both here in great numbers; for I counted fourteen to sixteen). Over the lake hovered, fishing, a host of Gulls, which, as usual, were pursuing their

prey in company. In short, the whole formed a most lively and interesting picture, which was greatly enhanced by the beautiful scenery around the lake. The trees, in some of which were four or five nests, were hard to climb; and I had trouble to get good eggs, especially as the Cormorants had mostly hatched out."

The young when first hatched are bare, and livid in colour; but after the lapse of a few days they are covered with a close, soft, sooty greyish brown down, the bare face and beak being flesh-coloured, the latter greyish towards the tip. This down plumage is retained until the immature dress above described is donned.

The specimens figured are an adult male in full summer dress in the background, and an adult in winter plumage in the foreground, both being the birds above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂, *b*, ♀. Orkney (*Dunn*). *c*, *jun.* Amoy, China, January 1867. *d*, *juv.* Amoy, February 1867. *e*. Amoy, November 24th, 1867 (*R. Swinhoe*). *f*, ♂ *ad.* Point Lepreaux, Bay of Fundy, May 1864 (*H. E. D.*).



J. G. Keulemans lith

Hanhart imp

SHAG.
PHALACROCORAX GRACULUS.

PHALACROCORAX GRACULUS.

(SHAG.)

Phalacrocorax minor, Brisson, Orn. vi. p. 516 (1760).
Pelecanus graculus, Linn. Syst. Nat. i. p. 217 (1766).
Procellaria graculus (Linn.), Müll. Zool. Dan. Prodr. p. 18. no. 147 (1776).
Procellaria cristatus, Müll. op. cit. p. 18. no. 150 (1776).
Pelecanus cristatus, Fabricius, Faun. Grœnl. p. 90 (1780).
Carbo graculus (L.), Meyer, Taschenb. deutsch. Vogelk. ii. p. 900 (1810).
Phalacrocorax graculus (L.), Leach, Cat. M. & B. Brit. Mus. p. 34 (1816).
Hydrocorax cristatus (Müll.), Vieill. Nouv. Dict. viii. p. 89 (1817).
Carbo cristatus (Müll.), Temm. Man. d'Orn. ii. p. 900 (1820).
Halieus graculus (L.), Licht. Verz. Doubl. p. 86 (1823).
Phalacrocorax cristatus (Fabr.), Steph. in Shaw's Gen. Zool. xiii. part 1, p. 83 (1825).
Carbo desmaresti, Peyraudeau, Ann. des Sc. Nat. 1826, p. 460.
Carbo brachyuros, C. L. Brehm, Vög. Deutschl. p. 822 (1831).
Carbo leucogaster, Cara, Orn. Sard. p. 199, spec. 261 (1842).
Graculus cristatus, G. R. Gray, Gen. of B. iii. p. 667 (1845).
Graculus linnæii, G. R. Gray, ut suprà (1845).
Graculus desmarestii (Peyr.), G. R. Gray, ut suprà (1845).
Phalacrocorax desmaresti (Peyr.), C. L. Brehm, Vogelfang, p. 360 (1855).

Scarbh, Gaelic; *Cormoran-largup*, French; *Corvo marinho*, Portuguese; *Marangone col ciuffo*, Italian; *Haubenscharbe*, *Krähenscharbe*, German; *de gekuifde Aalscholver*, Dutch; *Topskarv*, Icelandic; *Skarvur*, Norwegian; *Kråkskarf*, Swedish.

Figuræ notabiles.

Temminck, Pl. Col. 322; Kjærb. Orn. Dan. taf. 50, Suppl. taf. 32; Naumann, Vög. Deutschl. taf. 280; Gould, B. of Eur. pls. 410, 411; id. B. of G. Brit. v. pl. 53; Schlegel, Vog. Nederl. pls. 327, 328.

Ad. ptil. æst. virescenti-niger: dorsi et alæ plumis pallidioribus et nigro marginatis: occipite cristato: remigibus et rectricibus nigris: rostro nigro, ungue flavo-fusco: gulâ et rostro ad basin flavidis nigro notatis, regione oculari nudâ nigrâ: iride viridi: pedibus nigris.

Ad. ptil. hiem. haud cristatus, collo striis minutis albis notato.

Juv. pileo, collo postico et uropygio viridi-fuscis, plumis angustè albo-fusco apicatis: dorso viridi-fusco, plumis marginibus anteapicalibus nigris et angustè fusco-albo marginatis: tectricibus alarum fuscis conspicuè albido terminatis: remigibus et rectricibus viridi-fuscis albido marginatis et apicatis: gulâ et corpore subtùs albis, gutture fusco-albido, hypochondriis fuscis: rostro fusco, subtùs fusco-incarnato, ad basin et facie in parte nudâ flavis: pedibus fuscis.

Adult in summer (Orkneys). General colour of plumage blackish green, with a silky lustre, the head and neck being more richly glossed with green than the other parts; back, scapulars, and wing-coverts lighter, the feathers narrowly margined with velvety black; quills and tail black with a faint greenish tinge; on the head, a little below the level of the eye, is a broad tuft of recurved oblong feathers considerably over an inch in length; bill black, with the nail yellowish brown; basal portion and bare part of the chin yellowish, marked with black; angle of the mouth orange; bare space round the eye black, with a yellowish spot at the base of the bill; iris rich green; legs black. Total length about 26 inches, gape 3·6, wing 9·9, tail 5·7, tarsus 2·4.

Adult in winter. Differs from the adult in summer in having the head crestless and a few scattered minute filiform pencil-tipped white plumelets on the neck.

Young (coast of Sicily). Crown and hind neck dark brown with a greenish tinge, the feathers tipped with pale brown; upper parts brown with dull greenish brown, the feathers margined with black, many having an external brownish white margin; rump almost uniform dull greenish; wing-coverts brown with broad dirty white margins; quills deep brown with a greenish tinge, narrowly margined and tipped with brownish white; chin, upper throat, and underparts generally pure white, neck brownish white; flanks brown; bill dusky brown above, brownish flesh below; bare skin at the base and round the eye dusky yellow; legs dusky brown.

Nestling. When first hatched the young are bare and livid blackish, but soon become covered with brownish black down.

Compared with that of the Cormorant, the range of the present species is somewhat restricted; for, though common in Northern and Western Europe as well as in the Mediterranean, it is not found further east than the Black Sea.

In Great Britain the Shag is more frequently seen in the north than the south, and is somewhat locally distributed, being less numerous than the Cormorant. In Guernsey, Mr. Cecil Smith informs me, it is very abundant, especially in the breeding-season, occupying every available ledge on all the cliffs; and the same may be said of Alderney and Sark; when he was there, in the first week in June 1876, the young were hatched, and were standing on the rocks beside their mothers, appearing nearly as large as they, though not able to fly. It occasionally visits some parts of the south coasts of England, but is said to be wanting on the shores of Kent, Sussex, and on the east coast of England up to Yorkshire; and Mr. Cecil Smith informs me that on the west coast he does not know of any instance of its occurrence off Somersetshire. On the Northumberland and Durham coasts, however, according to Mr. Hancock, "the Shag is a resident. It breeds rarely at the Farne Islands, where its eggs were taken in June, about the year 1820, by the late Mr. John Laws and the late Mr. R. R. Wingate. George C. Atkinson, Esq., has also taken the eggs of this species at the Farne Islands, and presented them some years ago, along with his valuable collection of eggs, to the Newcastle Museum. Mr. James Sutton informs me, October 1, 1873, that the Shag nested this year on the Farne Islands."

In Scotland, Mr. Robert Gray writes (B. of W. of Scotl. p. 457), "though less numerous on the western shores of the mainland than the Cormorant, the Shag is abundant in the Outer Hebrides, where it is permanently resident, and to a great extent gregarious. It is found breeding in great numbers in all the caves which intersect the precipitous coasts of Harris

and Barra, and also on the uninhabited rocks, such as the Haskeir group and other islands, lying to the west of North Uist. Very large companies frequent the sounds which separate the islands; and in these stations they are seen daily, at certain states of the tide, fishing in congregations which in extent remind one of a dense colony of Guillemots. Late in the afternoon they rise on wing in detachments, and betake themselves to the caves in which they generally pass the night. One of these caves named Liuir, on the west side of Harris, is perhaps the best-known throughout the Long Island. There cannot be less than two or three hundred Green Cormorants in it during the breeding-season; and at other times of the year it gives ample shelter to the poor birds when the fury of the winter storms prevents a seaward flight. In the Inner Hebrides this Cormorant is equally common, frequenting similar caves. Dr. Dewar found a large breeding colony in the island of Rum; the nests were chiefly on broken boulders not far from the water's edge; and the birds were so tame as to allow themselves to be seized with the hand before quitting the nest. Nearer the mainland it is found in Skye, Mull, Iona, and Staffa, as well as upon Islay, Jura, and Gigha; a few frequent Ailsa Craig; and I have observed considerable numbers in the caves along the rocky shores of Ayrshire and Wigtonshire. It is frequent at the Mull of Galloway and at Burrow Head, thence northward as far as Garliestown. I have seen from forty to fifty in one day while driving between these two places."

In Ireland, Thompson writes (B. of Irel. iii. p. 250), "the Shag is resident, inhabiting all quarters of the coast, but generally less numerous than the common species (*Phalacrocorax carbo*). . . . Much the best account we have of this bird in any breeding-haunt on the coast of Ireland is from Dr. J. D. Marshall, who informs us, in his published memoir, that about the 1st of July, 1834, 'we found this Cormorant (*Phalacrocorax cristatus*) in pairs, frequenting the numerous caves with which the northern and western shores of Rathlin are indented. They formed their nests on the high ledges of rock, almost touching the summit of the caves; the nest was composed of fuci of various kinds, matted and plastered together; the eggs were of a bluish-green colour. We sometimes, by good management, entered the caves ere the Cormorants had left, and at such times we found them sitting, with the neck and head thrust over the ledge of the rock, looking down on the boat as it made its way to the inner extremity of the cave. On firing our guns they would drop into the water as if they had been shot, and, with great expertness, dive under the boat, and make their way out to sea. This species seemed much more numerous than the common Cormorant (*Phalacrocorax carbo*).'"

The Shag does not appear to have occurred in Greenland; but it is said to be tolerably common and resident in Iceland, as also in the Færoes. It is found on the coasts of Norway throughout the entire year. Mr. Collett says that it is sparingly met with off the Nedenæs coast, in Christiania Stift, becoming more numerous west of Lindesnæs, and off Stavanger it is common. It breeds all along the west coast of Norway, being most abundant within the Arctic circle. According to Nilsson it is not met with on the Baltic coasts of Sweden; nor does it ever visit the coasts of Finland, except that portion of Finnish Lapland which skirts the Arctic Ocean. It is not found in the Baltic Provinces or Poland; and in North Germany it is of rare occurrence, not having been met with on the Baltic coast. According to Naumann it has once been shot, and several times seen, off the Elbe; Brahts records it from Neuwied, and Altum as having been obtained in Westphalia. It is only occasionally met with on the coasts of Denmark, and has

been shot, Mr. Collin says, at Flensborg and Frederiksstad. After severe storms it is sometimes seen off the Dutch and Belgian coasts, as also on the northern shores of France; but from Cherbourg to Finisterre it is found breeding; and it is said to be common on the Portuguese coasts. Colonel Irby states that he found it numerous in the Straits of Gibraltar, and adds that he found it breeding at the island of Peregil, under Apes' Hill, on the African coast. Mr. Howard Saunders writes that he found it breeding on the island of Dragonera, and it is common throughout the Mediterranean. Lord Lilford informs me, "it abounds on the south coast and islets off Sardinia; we found some young in the nests and many swimming, but unable to fly, at the Isola Rossa and about Vacca. It is common also on the coast of Epirus, where I obtained specimens, in June 1875, not far from Gomenizza. We also found it breeding on the rocky islet of Standia, opposite the town of Candia, on Paleocastrizza, in Crete. On the south coast of Cyprus I often observed Shags, but did not obtain any specimens. I never found a crest in any specimen in the Mediterranean. The Crested Green Shag was very common about the Lizard in July 1852; and I obtained specimens and eggs there in that month; all these birds had more or less crest. In the Mediterranean, especially on the coast of Sardinia, I noticed that the Shag and common Cormorant (*Ph. carbo*) breed apart, and do not seem to fish in company."

I am indebted to Lord Lilford for the loan of his series of Shags from the Mediterranean; and having carefully compared them with examples from the British Isles, I cannot find any specific distinction. The only difference I see in the series before me is that none of adult examples from the Mediterranean has the crest as in those from the British coast; but otherwise, in coloration and measurements, they are indistinguishable. This being the only difference, I cannot think that the Mediterranean bird can be looked on as specifically separable.

In Southern Germany the Shag is a very rare bird; but Messrs. Danford and Harvie-Brown state (Ibis, 1875, p. 431), on the authority of Herr Buda Ádám, that it has occurred in Transylvania. Dr. Krüper states that it is resident in Greece and the Cyclades, and he met with it breeding in the latter islands and in the northern Greek islands, where its eggs are deposited very early in the season. Von Nordmann says that it is only occasionally met with in the spring and autumn in the Black Sea. Lord Lilford observed it off the coasts of Asia Minor; but Canon Tristram did not meet with it in Palestine, nor did Von Heuglin ever come across it on the coasts of North-east Africa. It is, however, resident in North-west Africa, and is found, Loche says, on the Algerian lakes, especially those near the sea. Favier also states (*fide* Colonel Irby) that it is rare near Tangier, but is found there throughout the whole year.

In South Africa it is replaced by a very closely allied species, *Phalacrocorax capensis* (Sparrm.), said to differ in having fourteen instead of twelve rectrices, in being larger in size, and in not having a crest in any stage of plumage.

In general habits the Shag differs but little, if at all, from the Cormorant, except that it is more seldom seen on fresh water. Like that species it is an expert diver, subsisting on small fish, amongst which it creates great havoc. It is generally seen either seated on some ledge, often in a very exposed position, or else on the water. It flies swiftly, and is very powerful on the wing, but is not seen far from land, and appears to fish in shallower water than the Cormorant. It breeds on the rocks, either in crevices or else on ledges, usually in colonies, being very gregarious in its habits. The nest is a clumsy, careless structure, composed of seaweeds,

heather, &c.; and the eggs, three or four in number, are bluish white, covered with a chalky substance, elongated in shape, and rather smaller than those of the Cormorant.

Respecting its habits in Great Britain I cannot do better than transcribe the following excellent notes from Macgillivray's 'British Birds,' v. p. 396:—"There is a large cave on the west coast of Harris celebrated for the number of Scarts which reside in it, and so lofty that a boat can enter to a considerable distance without having the masts taken down. I have several times visited it for the purpose of shooting the birds in the breeding-season, when they had numerous nests on its sides. When we appear off the mouth of the cave, we see a considerable number of Scarts conspicuously perched on the little shelves and projections, their dusky figures strongly relieved by the whitened surface of the rock. Some of them fly overhead as we approach; but more drop into the water like a stone. On looking down, we see them rapidly wending their way under the boat, flying with outspread wings, and not at all in the manner represented by some, who say that this bird propels itself under water entirely by the feet and tail. Of this I am certain, having been an eye-witness of the fact. Glancing aloft, we see many Black Guillemots in the clefts, and above them the eyrie of the White-tailed Sea-Eagle; but our business is with the Scarts, which, now alarmed, are seen writhing their long necks as they gaze upon us. Presently a shot is fired—another; the dead birds drop on the water, the living plunge headlong into it; many advance on wing, but, being frightened by the upraised oars, dart into the water. Advancing a little, we find that many still remain on the rocks; and of these we shoot some more. Presently some of those which had escaped return and perch; and thus we continue shooting until we have obtained as many as we desire. After all the uproar, several still remain standing near their nests, so loth are they to quit them. Although most of the nests are beyond reach, some are accessible. We find them generally bulky, but sometimes very scanty, formed of fuci, twigs, heath, and grass, rudely put together, nearly flat, or with a shallow cavity, containing two, frequently three, sometimes four eggs, never more. The eggs are generally soiled by the feet of the birds, like those of the Gannet and Grebes. In some of the nests are young birds in various stages. At first they are bare all over, and of a purplish-black colour. Presently, however, they are covered with brownish-black down, soft, but not close, and leaving the head, part of the neck, and the abdomen bare. Then the feathers gradually sprout; the birds rapidly increase in size, and in seven or eight weeks are fledged. They are at first fed with half-digested fish disgorged by their mother, and at length, becoming very plump, are esteemed delicate food by the Hebridians. I have eaten a portion of one, but did not relish it; and the flesh of the adult bird is much worse.

"To one of these caves is a narrow passage from the land. I have often crept into it, and, advancing stealthily, have seen eight or ten Scarts below, at the distance of a few yards, brooding over their eggs or young, or standing beside them. On the arrival of their mother, the young open their bills wide, stretching up their necks with a wriggling kind of motion, and receive their food from her mouth. The nest, as well as the rocks around, is covered with white dung; and a disagreeable stench, as of putrid fish, emanates from them. The Rock-Pigeons frequently, and Starlings sometimes, roost and nestle in these caves. On my shouting, these birds instantly flew off; but the Cormorants remained standing in a state of great anxiety, until I showed myself, when they would take wing, leaving their young at my mercy. They soon returned,

however, and, on my again hiding, forgot their alarm. Many little things are neglected on such occasions, however keen the observer may be; and I have now to regret that I can say nothing with certainty as to the cries of either young or old.

"Although most of them repose in the caves and fissures all the year, many, after the breeding-season, roost on the shelves of rocks. Sometimes during very severe storms in winter, when the sea is so agitated as to prevent a bird from seeing into it, they remain at home all day; but this seldom happens, even on the most exposed parts of the coasts, as the creeks and little bays present smoother water. It does not appear that this species often visits lakes or rivers. Nor is it ever met with far out at sea, its favourite fishing-stations being the eddies of channels, bays, and estuaries. Great numbers frequent particular low rocks or insular crags for the purpose of resting at some period of the day, generally between ebb and high water. There they preen themselves, spread out their wings in the sun or wind, and repose in a standing posture, with contracted neck.

"In dry weather, I have often seen individuals of this species, while swimming, erect themselves in the water, and, spreading out their wings, remain in that posture for a long time. On the rocks, and sometimes on low islands and sandbanks, it is common enough to see them with all their broad funereal banners spread oat. Although not so shy as the Great Cormorants, they seldom allow a boat to come within shot on such occasions; and while engaged in fishing they cannot often be obtained, on account of their vigilance and the extreme rapidity of their movements. On being fired at, or otherwise alarmed, they always dive, and reappear at a distance. They rise heavily from the water, striking it with their feet and wings to a considerable distance; and in alighting, on it or on the rocks, they come down abruptly. On land they move clumsily, being incapable of walking effectively. Indeed the roosting-places of many of them do not present a surface of a foot square; and they never alight elsewhere, unless for the purpose of resting. Toward evening, when their labours are finished, they may be seen wending their way in silence over the sea, generally near the coast, and in strings to their roosting-places."

Mr. Benzon informs me that sometimes a disease rages amongst the Shags in the Færoes, and when attacked by it the birds go on land and die in large numbers. When suffering under this disease, they can be easily caught with the hand. I may also add that Mr. Collett, who informs me that the Shag, which breeds in large numbers in the north of Norway, in company with Eiders, Kittiwakes, and other sea-birds, though seldom with the Cormorants, usually deposits three, sometimes five or six, and occasionally as many as eight eggs. "On the 26th June 1872," he adds, "nests were found at the North Cape, some of which contained eggs, and others half-fledged young. A similar disparity is observed in the broods, the young being of different sizes in the same nest. The old birds keep their offspring gorged with fish."

The specimens figured are an adult male from Orkney and a young bird from the Mediterranean, both of which are in my own collection.

In the preparation of the above article I have, besides the series from the Mediterranean collected by Lord Lilford, examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂, *b*, ♀. Orkneys (*Dunn*). *c*. Færoes, 1871 (*Benzon*). *d*, *juv*. Coast of Sicily (*Doderlein*).



AFRICAN CORMORANT
PHALACRACORAX AFRICANUS

PHALACROCORAX AFRICANUS.

(AFRICAN CORMORANT.)

African Shag, Lath. Synopsis, iii. pt. 2, p. 606 (1785).
Pelecanus africanus, Gm. Syst. Nat. i. p. 577 (1788, ex Lath.).
Halieus pygmæus, Licht. Verz. Doubl. p. 86 (1823, nec Pall.).
Phalacrocorax africanus (Gm.), Audouin, Expl. somm. Pl. Hist. Nat. de l'Egypte, p. 313 (1825).
Carbo africanus (Gm.), Lesson, Traité d'Orn. p. 604 (1831).
Carbo africanoides, Smith, Rep. Exped. Expl. Centr. Afr., App. p. 57 (1836).
Carbo longicaudus, Swains. B. of W. Afr. ii. p. 255, pl. 31 (1837).
Halieus africanus (Gm.), Sund. Phys. Sällsk. Tidsk. i. p. 54 (1838).
Graculus africanus (Gm.), Gray, Gen. of B. iii. p. 667 (1849).
Phalacrocorax longicaudus (Sw.), Licht. Nomencl. Av. p. 102 (1854).
Haliæus africanus (Gm.), Bp. Consp. Gen. Av. ii. p. 178 (1857).
Graculus coronatus, Wahlb. J. für Orn. 1857, p. 4.
Microcarbo africanus (Gm.), G. R. Gray, Hand-l. of B. iii. p. 129 (1871).

Figuræ notabiles.

Mus. Carls. pl. 61; Savigny, Descr. de l'Egypte, pl. 8. fig. 2.

Ad. capite, collo, dorso centraliter, uropygio, caudâ et corpore subtùs nigerrimis viridi nitentibus, fronte cristatâ: dorsi lateribus, scapularibus et tectricibus alarum griseis nigro apicatis, sed marginibus alarum nitidè nigris: remigibus nigris griseo lavatis: rostro flavido, suprà brunneo notato: iride coccineâ: pedibus nigris.

Juv. pileo, capitis et colli lateribus et collo postico nigro-fuscis, pallidè brunneo mixtis: dorso centraliter nigro pallidè brunneo marginato, uropygio nitidè nigro: caudâ et alis ut in adulto picturatis sed his sordidioribus, scapularibus et tectricibus alarum sordidè fusco-cinereis nigro apicatis: mento et gulâ albis, gutture albo pallidè brunneo notato: corpore reliquo subtùs albo, præter hypochondria et subcaudales intensè nigra.

Adult in full plumage (Egypt, 2nd May). Head, neck, centre of the back, rump, tail, and entire underparts glossy black with bottle-green reflections; forehead intermixed with white and furnished with a short crest; sides of the back, scapulars and wing-coverts (except along the ridge of the wing, which is coloured like the back) grey and blackish grey tipped broadly with black; quills black, washed with grey; bill yellow, the ridge of the upper mandible brown; iris carmine-red; legs black. Total length about 17 inches, culmen 1·5, gape 2·0, wing 7·5, tail 6·0, tarsus 1·5.

Young (Egypt, 5th June). Crown, sides of the head and neck and hind neck dark blackish brown intermixed with light brown; fore part and centre of the back black edged with light brown; rump glossy black; wings and tail as in the adult, but duller, the scapulars and wing-coverts being dull brownish

ash tipped with black; chin and upper throat pure white; lower throat white marked with light brown, rest of the underparts pure white, except the flanks and under tail-coverts, which are glossy black.

Obs. The present species appears to pass through similar changes of plumage as the Pygmy Cormorant; but in immature dress it may always be distinguished from that species by the black-tipped wing-coverts and scapulars. A second specimen, in Mr. Gurney's collection, is in an interesting stage of transition from the young to the old plumage, the underparts being mottled black and white, the head almost as in the young bird, and on the upper parts of the body it has assumed the full plumage. There does not appear to be any difference in size or coloration between the sexes.

This southern representative of our Pygmy Cormorant only just occurs within the limits of the Western Palæarctic Region, being met with towards the mouth of the Nile; but it is generally distributed in suitable localities throughout Africa as far south as the Cape colony. It appears to be far commoner in Egypt than *Phalacrocorax pygmæus*, and judging from Captain Shelley's description (B. of Egypt, p. 296), he appears to have mistaken the present species for the Pygmy Cormorant; but both species occur at the Fayoom, where he obtained his specimens. Von Heuglin states (Orn. N.O.-Afr. p. 1495) that it is very common on the White and Blue Nile and their tributaries northward to about 15° N. lat., and on all the lakes and streams of Abyssinia southward to the Galla country, and is occasionally met with at above 8000 feet altitude; and he adds that he believes it occurs in the delta of the Nile. Mr. J. H. Gurney, jun., says that he was informed by M. Filliponi that the present species or else *Ph. pygmæus* used formerly to be common at Damietta, and he himself found it at Lake Fayoom, where, he says, it is one of the commonest birds. I do not find it recorded from Algeria or Morocco; but it has been met with in Senegambia, on the Gold Coast, and Benguela. Mr. R. B. Sharpe says that Mr. Ussher sent a specimen from the Volta; and it was met with in Damara Land by Mr. Andersson, who writes (B. of Damara L. p. 370) as follows:—"This Cormorant occurs on Lake Ngami and its watersheds; but I have never met with it, except on inland waters. It feeds on fish, and is a most expert diver. Its flight is strong and rapid; and it perches on trees both during the day and at night. This species feeds chiefly at night; as the sun declines it is seen in flocks flying to its fishing-grounds. During the day it remains in great measure stationary, either lazily sunning itself on some branch overhanging the water, or on a bunch of reeds; or it may be seen standing erect on a sandbank, with outstretched wings. When in the water, it has the habit of submerging its body to such an extent as to leave little more than the neck exposed." Mr. E. L. Layard, who also records it as found on Lake Ngami, adds (B. of S. Afr. p. 381) that one was sent from Colesberg by Mr. Arnot. Mr. Ayres met with it in Natal, and says that it frequents the freshwater lagoons on the coast; and it is also recorded from the Zambesi, Mozambique, and Madagascar. Both Dr. Kirk and Mr. Ayres give some few details respecting its habits. The former, writing respecting its occurrence on the Zambesi, says (Ibis, 1864, p. 338) that he found it "common on all rivers, lakes, and lagoons. Its breeding-places are the retired islets among the rapids, commonly unapproachable. A second species, much larger and with a white neck, occurs rarely on the Lower Zambesi, but is common among the rapids of the Shiré, where it breeds, and on Lake Nyassa. In the shallow lake through which the Shiré flows after leaviug the Nyassa, the natives drive piles in the bottom, at a distance from shore, and rising a foot

above the surface. An elastic piece of wood, with a noose attached, is placed on the main pile, and serves to trap the Cormorants and Darters, which come to rest on them." Mr. Ayres says (Ibis, 1862, p. 154) that the "flight of this bird is rapid and strong. When in the water it swims extremely low, scarcely any part of its back being then visible. Both in the air and on the water it much resembles the Anhinga (*Plotus levaillantii*) in appearance. It is a very superior diver, and feeds entirely on fish; if disturbed, instead of diving, it generally seeks safety on the wing. It is solitary in its habits, and, like the Anhinga, is particularly fond of sunning itself with outstretched wings on some clump of rushes." Von Heuglin (*l. c.*) says that he doubts if it ever migrates in North-east Africa, where it is very generally found in larger and smaller companies in the large morasses, lakes, half-dried-up streams, and even ponds. It does not swim much, but prefers to sit in wait for its prey on a branch or reed, or on a rock. Nor does it feed solely on fish, as he has found frogs and even grasshoppers in its stomach. It is not so shy as, but more active than its congeners. Its flight is swift and direct, somewhat resembling that of a Duck; and when surprised it seldom dives, but takes flight at once. He further remarks that he has on several occasions seen it consorting with Ducks and Anhingas.

Some interesting notes respecting the present species have lately been published by Mr. J. H. Gurney, jun. (Rambl. of a Naturalist, p. 240), which I transcribe as follows:—"Some of these birds we shot were in immature or perhaps still in winter plumage, and had all the underparts, except the vent, white; others were curiously mottled black and white; and others again were in full breeding-plumage. Some of the latter had the flesh on the forehead raised in a very singular manner; but on looking at my skins I see that it has shrunk down very much. These birds had also crests; but the strangest thing about them is a sharp bone, half an inch long, at the back of the head, which can be felt projecting under the skin. It was great sport shooting them in the evening, which may easily be done as they come flying down the Bar-el-Wady canal, which unites the Bar-Joseph to the lake (Fayoom). Here one of us would hide behind the stunted bushes; and as they passed with great regularity we knew exactly what time to look out for them. It is necessary to see them a long way off, as they are rather shy, and to keep well hidden; but sometimes the specks which we took to be Cormorants turned out to be only Buff-backs, though generally they flew in more straggling flocks. Now and again a single bird would come stealing low over the water, or a pair would pass us out of range. They would probably be on their way to a bed of tamarisks, a mile out in the lake, where they intended nesting with the Buff-backed Herons. We saw a few sitting upon nests; but they had evidently not begun to lay, and, indeed, they may only have been using empty nests as a convenient perching-place. They took up a position on higher boughs than the Buff-backs; and often seven or eight were perched on the top of the same tamarisk. All the nests there resembled each other, and were built of the same materials; so that I judged they were all those of Buff-backs or belonged to some species of Heron. I saw a Buff-back settle upon one, on which a moment before a Cormorant had been. They are such expert divers that of the first six shot by my friend only one was bagged. When not fat they are very easy to skin."

In mode of nidification the present species is said to agree closely with *Phalacrocorax pygmæus*; and its eggs doubtless resemble those of that species; but I have been unable to obtain any for examination.

The specimens figured are an adult bird, in full plumage, in my own collection, for which I am indebted to Mr. J. H. Gurney, jun. (who most generously gave me the only fully adult specimen he possessed), and a young bird. The latter is from the collection of Mr. Gurney; and both are the examples above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Fayoom, Egypt, May 2nd, 1875 (*J. H. Gurney, jun.*).

E Mus. J. H. Gurney, jun.

a, ♀ *juv.* Fayoom, June 5th. *b*, ♂ *jun.* June 7th, 1875 (*J. H. G., jun.*).



PIGMY CORMORANT.

PHALACRocorax PYGMÆUS

PHALACROCORAX PYGMÆUS.

(PYGMY CORMORANT.)

Pelecanus pygmæus, Pall. Reise, ii. p. 712, Anhang (1773).
Phalacrocorax pygmæus, Pall. Zool. Rosso-As. ii. p. 300 (1811).
Carbo pygmæus (Pall.), Temm. Man. d'Orn. p. 591 (1815).
Hydrocorax pygmæus (Pall.), Vieill. Nouv. Dict. viii. p. 88 (1817).
Hydrocorax niger, Vieill. tom. cit. p. 88 (1817).
Carbo javanicus, Horsf. Trans. Linn. Soc. xiii. p. 197 (1822).
Carbo melanognathus, Brandt, Bull. Ac. Sc. St.-Pétersb. iii. p. 57 (1838).
Halieus pygmæus (Pall.), J. F. Naumann, Vög. Deutschl. xi. p. 112 (1842).
Graculus pygmæus (Pall.), G. R. Gray, Gen. of B. iii. p. 667 (1849).
Carbo (*Phalacrocorax*) *niepcii*, Malh. Faun. Orn. Alg. p. 38 (1855).
Microcarbo pygmæus (Pall.), Bp. Cat. Parzud. p. 10 (1856).
Haliæus melanognathus (Brandt), Bp. Consp. Gen. Av. ii. p. 179 (1857).
Haliæus pygmæus (Pall.), Bp. ut suprà (1857).
"*Haliæus algeriensis*, Reich." Bp. ut suprà (1857).
Haliæus javanicus (Horsf.), Bp. ut suprà (1857).
Haliæus niger (Vieill.), Bp. ut suprà (1857).

Cormoran pygmée, French; *Marangone minore*, Italian; *Zwerg-Scharbe*, German.

Figuræ notabiles.

Pall. *op. cit.*; Naumann, Vög. Deutschl. taf. 281; Gould, B. of Eur. pl. 409.

Ad. pileo, nuchâ, collo postico et colli lateribus rufescenti-brunneis, fronte saturatiore et viridi-nigro lavatâ: dorso centraliter, scapularibus, tectricibus alarum et secundariis intimis nigro-griseis, nigro marginatis: corpore reliquo suprà, gulâ centraliter et corpore subtùs nitidè nigris vix viridi nitentibus et albo guttatis: rostro nigro: iride fuscâ: pedibus nigris.

Juv. pileo, nuchâ et collo postico sordidè brunneis vix rufescenti tinctis: corpore suprà griseo-nigricante, plumis centraliter pallidioribus et brunneo marginatis: uropygio nigro vix viridi tincto: caudâ et alis ut in adulto sed sordidioribus: mento albo: gulâ, gutture et pectore brunneis, plumis albido apicatis, corpore reliquo subtùs albido et pallidè brunneo immixto, hypochondriis et subcaudalibus nigris: rostro flavido: iride pallidè brunneâ: pedibus nigricantibus.

Adult in spring plumage (Hungary). Crown, nape, and hind neck, including the sides of the neck, glossy reddish brown, the forehead much darker, and tinged with greenish black; centre of the back, scapulars, wing-coverts, and inner secondaries blackish grey, margined round the feather with glossy black; wings and tail black; fore part of the throat from about the centre downwards, the entire underparts, and the rest of the upper parts not above described glossy black with a bottle-green tinge, marked with pure white spots, these spots being composed of peculiar feathers consisting of a fine bare

shaft tipped with a white tuft; bill black; iris brown; legs black. Total length about 21 inches, culmen 1·35, wing 8·0, tail 6·5, tarsus 1·3.

Female. Resembles the male, but is rather smaller in size, less rich in coloration, and is less profusely marked with the peculiar white spots.

Young (Butrinto, October). Crown, nape, and hind neck dull brown with a rufous tinge; upper parts generally blackish grey with a faint gloss, darker towards the margins of the feathers, which are narrowly edged with light brown; rump blackish with a faint greenish gloss; tail as in the adult, but duller; chin white; throat and breast brown, the feathers tipped with dull white; rest of the under-parts dull white intermixed with light brown, except the lower flanks and under tail-coverts, which are black; bill yellowish; iris lighter than in the adult; legs blackish.

Young in down (*fide* Naumann). Covered with short, close, sooty down; bill blue with white tip; edge of gape and throat flesh-coloured; feet flesh-coloured, except on the outer portion, where they are blue.

Obs. According to Naumann it has a summer plumage which differs essentially from the above-described spring dress. In this plumage the upper throat is white, the brown on the neck extends onto the breast, and the peculiar white-tufted feathers which form the spots so conspicuous in the spring plumage are wanting. This spring plumage, as I have called it, however, is (like the rich plumage of some of the Ducks) worn in the winter, and retained until the female is incubating, when it is exchanged for the true summer plumage, which is only worn for a short time.

The present species, the smallest of our European Cormorants, inhabits Southern, and more especially South-eastern Europe, North Africa, and Southern Asia, as far as Java and Borneo. It has not been met with in Northern Europe; and though Herr Johann von Fischer speaks of it (J. f. O. 1872, p. 390) as being extremely scarce in the St.-Petersburg district, I cannot help thinking that this gentleman may have been mistaken. Mr. A. von Homeyer writes (J. f. O. 1870, p. 231) that one was shot some years ago near Görlitz, on the Leopoldshainer Lake, and is in the Museum at Görlitz; but I find no record of its occurrence in other portions of Central or Northern Europe, and it does not inhabit France, Portugal, or Spain. In Italy, however, it is recorded by Salvadori as of very rare and accidental occurrence, having been observed in Venetia, Tuscany, and Naples; and he obtained one of two individuals shot on the Tenna on the 28th October, 1866. Three specimens have been obtained in Sardinia; but there is no actual record of its occurrence in Sicily, though it might be expected to visit that island. In Southern Germany it becomes more common. Naumann says that it has occurred once or twice on the Neusiedler lake; and in Hungary it is very generally to be met with in suitable localities. In Transylvania, Messrs. Danford and Harvie-Brown write (Ibis, 1875, p. 431), it is "not very rare. It generally appears in large flocks, and has been met with on the Alt and Strell. On the latter two young birds were killed in December at Brettye."

When travelling down the Danube I frequently observed this little Cormorant, and was told that it breeds not unfrequently on the islands in that river. From Belgrade downwards it appears to be by no means a rare species. I passed through the countries skirting the Danube, too early, however, to obtain the eggs of this bird myself, and have never had an opportunity of seeing its nest. It is a cold-weather visitant to Greece. Dr. Krüper says that during the

winter it is tolerably common amongst the islands in the lagoons of Missolonghi, but disappears in April. He does not know if it ever remains to breed there. It winters in the Cyclades, and is common in Macedonia at that season of the year. Colonel Drummond-Hay speaks of it as common during the cold season at Butrinto, and somewhat rare in Cephalonia, but not found at Corfu; but Lord Lilford states (Ibis, 1860, p. 355), it is "very abundant in winter in Epirus; appears to have no particular preference for salt water to fresh, as it is often to be found in ditches and flooded meadows far from the sea. I saw this species in Albania in August 1857." It is found in suitable localities in Southern Russia, and nests, Mr. Jacovleff says, in the delta of the Volga, about fifty miles from Astrachan. Mr. Danford met with it in the marshes near the Meander, and in Adalia, in Asia Minor, where it was common; and Canon Tristram records it from Palestine, where he met with it on the Leontes and other streams flowing into the Mediterranean. He did not observe it in the Jordan valley, where, however, he adds, it might easily have escaped his notice. In North-east Africa the present species is less numerous than the African Cormorant. Von Heuglin says that during the winter it is tolerably common in the lagoons of Lower Egypt, and lives in communities. He did not observe it on the Nile, but thinks it not improbable that it breeds in the delta. Captain Shelley writes (B. of Egypt, p. 295) as follows:—"The only locality in which I found this bird was the Fayoom, where it was not uncommon on the desert side of the great lake of Birket el Korn, and I shot two specimens. It is a far more active bird than the common Cormorant, and much more shy, but very similar in its habits; for as I paddled among the reeds I frequently saw it sitting upright on the halfsunken bushes, or diving actively in pursuit of fish. It appears to be a sociable species; for I generally noticed it in pairs or small flocks, possibly family parties; but it never flew in company with other birds." I am also indebted to Mr. J. H. Gurney, jun., for the following note:—"The Little Cormorant is probably far rarer than the long-tailed African Cormorant at the Faioom, as I only shot one, a male, on the 1st of June. We at once noticed it as something different, from its entirely black bill and pouch, dark brown eye, and brown head. All the long-tailed African ones which we shot, amounting to fifteen in number, had red or reddish eyes and yellow bills."

The present species is also found in Algeria, where, according to Loche, it is common, and breeds on Lake Fezzara. Loche states that there are two species in Algeria, one of which he calls *Haliæus algeriensis*; but Professor Schlegel, who has compared examples from Algeria, states that they are identical with *P. pygmæus*.

To the eastward the present species has a tolerably wide range. Pallas and Eichwald both record it from the Caspian. In India, Dr. Jerdon writes, it is exceedingly common in every part. I have examined specimens from India, in the British Museum, and cannot find any specific distinction between them and examples from Europe; and Professor Schlegel states that examples from Java and Borneo, where the present species is very common, are similar to the Indian bird.

I have only seen the present species on one or two occasions (when on the Danube), and have had but scanty opportunities of studying its habits. I am therefore glad to avail myself of the excellent notes communicated by the Baron von Loebenstein to Naumann, and published by him in his 'Naturgeschichte der Vögel Deutschlands,' xi. pp. 128–135. From these I translate the

following particulars respecting the habits of *Phalacrocorax pygmæus*:—When seated, this bird sits with its body erect, the tail somewhat drooped, and the neck drawn into an S-shape, and much shortened. When any thing attracts its attention it stretches the neck somewhat, but never straight out. The tuft on the forehead is then laid flat, whereas when the bird is sitting quietly or swimming it carries it erect. Its favourite perch is, curiously enough, on a reed growing straight out of the water, which it clutches with its feet close above the water, holding its body erect, the tail being pressed against the stem: and it is rather strange that it remains so long in this odd position; for the upper foot is much drawn in, and the lower one greatly stretched out. In a tree or bush it perches indifferently on a horizontal, vertical, or erect bough, and appears not to care if it is no thicker than a reed or is stouter than a man's thumb. It has generally some favourite perch, where it may almost always be seen, usually on the sunny side of a forest of reeds, or in an open place amongst the reeds; and generally several frequent the same place. It climbs about amongst the aquatic vegetation with ease; but on the ground it appears to be almost helpless. It swims, however, excellently, and is thoroughly at home in the water, both on the surface and underneath; for it dives with the greatest ease. When swimming, but little of the body is exposed to view, and the neck is curved into an S-shape; and when it feels itself insecure it exposes nothing but its head and the upper part of its neck, and frequently dives, swimming some distance under the water. On the wing it is swift, and propels itself with quick flaps of the wings, every now and again gliding with outstretched motionless wings for some distance, and except for this it not a little resembles the Mallard (*Anas boschas*) in its flight.

It is friendly towards others of its own species, and peaceable towards other birds, and therefore lives and breeds in company with other species which frequent the localities it inhabits. Though several pairs and often many live together, yet when they leave the nesting-place they do so singly or in pairs, and not several together. Usually the female leaves first, and the male follows her. It is a shy and very suspicious bird; and, except at its nesting-place, it is very difficult to approach it within range. Near its nest, however, one can get within fifteen or twenty yards of it—though, if a few shots are fired, they become shy, unless they have young, when love for their offspring makes them brave every danger, and compels them to return to their nests.

It feeds entirely on small fishes, and will capture them up to three, four, or five inches in length. It takes them when diving under the surface of the water, and will sometimes remain several minutes underneath, appearing not unfrequently to dive down to the bottom. It breeds in marshy localities in companies; and often hundreds of individuals nest in company together with Egrets, Spoonbills, and Ibises, in localities where the nests cannot be reached but with the greatest difficulty, and only by wading almost up to one's neck in mud and water; usually the nest is built in willow bushes. "In these nest-covered bushes," writes Baron von Loebenstein, "the Little Cormorant places its nest in the highest places, usually above seven or eight feet from the surface, up to about ten feet. The nest resembles those of the Egrets and Ibises; and it is possible that it takes possession of deserted nests of these birds, as the Cormorant does of those of the Heron. The nest may not inaptly be compared to that of the Ring-Dove, being, like that, built of dry sticks without any other materials; but it is stouter, and the centre is

depressed into a shallow cup. It may be distinguished from the nests of the Egret and Ibis at some distance by being covered with the white droppings of its possessor. Late in May the nest contains five or more, seldom six eggs; therefore it lays more than any of the other European species."

Both male and female incubate in turn, and are exceedingly careful. When not sitting on the eggs they perch close to the nest, only leaving when compelled to search for food, and when disturbed they fly round at no great distance from the nest; and when the young are hatched they are even more solicitous for their progeny.

Eggs of the present species in my collection resemble those of the Shag, but are much less in size, varying from $1\frac{28}{40}$ by $\frac{7}{40}$ to $1\frac{35}{40}$ by $\frac{9}{40}$ inch; and the surface of the shell is somewhat smoother.

The specimens figured are an adult male in full breeding-dress, and an immature bird in winter plumage, both from Southern Europe.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ad. Hungary, spring of 1872. *b*, ♂, *c, d*, ♀ *juv.* Butrinto, Albania, October 1871 (*Hanbury Barclay*).

E Mus. C. G. Danford.

a, ♂, *b*, ♀. Adalia, December 22nd, 1874 (*C. G. D.*).

E Mus. Brit. Reg.

a. Algiers. *b, ad., c, juv.* Ghelma. *d.* Behar, India (*Hodgson*). *e, f.* India.

E Mus. J. H. Gurney, jun.

a, ♂, *ad.* Fayoom, Egypt, June 1875 (*J. H. G., jun.*).

Genus SULA.

Sula, Brisson, Orn. vi. p. 497 (1760).
Pelecanus apud Linnæus, Syst. Nat. i. p. 217 (1766).
Dysporus apud Illiger, Prodromus, p. 279 (1811).
Moris apud Leach, Syst. Cat. M. & B. Brit. Mus. p. 35 (1816).
Morus apud Vieillot, Nouv. Dict. xii. p. 39 (1817).

This genus, of which only a single species is found in the Western Palæarctic Region, is represented in the Palæarctic, Ethiopian, Oriental, Australian, Nearctic, and Neotropical Regions. The species belonging to it are essentially sea-birds, frequenting salt water and feeding on fish, which they obtain by plunging from a height into the water. They fly at a moderate height, steadily and rather swiftly. They alight heavily, stand in an inclined position, walk very awkwardly, and have a very harsh cry. They breed in colonies on rocks and islands, constructing a bulky nest of grasses, turf, and weeds, and lay a single, elongated, chalky-surfaced, white egg.

Sula bassana, the type of the genus, has the bill longer than the head, straight, elongated, conical, moderately compressed; upper mandible with the ridge broad, separated from the sides by grooves, the sides being slightly convex, with a slender jointed additional piece beneath the eye, the edges sharp, irregularly jagged; tip acute, slightly decurved; the small gular sac is partially bare; nostrils obliterated in the adult, open in the young; wings long, narrow, pointed, the first quill longest; tail long, wedge-shaped; tarsus very short, sharp behind, scaly; toes united by a membrane, the middle toe longest; claws arched, moderate in size, that on the middle toe pectinate.

In the article on *Sula bassana*, owing to a slip of the pen, the young female is described in the English description as being an adult female; but the Latin diagnosis is correct. I take this opportunity of pointing out the error; for the adult female resembles the adult male in plumage, and is not, as it would there appear to be, spotted with white on a dark ground.



F.Neale del

W Hart lith.

GANNET.

SULA BASSANA

SULA BASSANA.

(GANNET.)

Sula major, Briss. Orn. vi. p. 497 (1760).
Sula bassana, Briss. tom. cit. p. 503, pl. xliv. (1760).
Pelecanus bassanus, Linn. Syst. Nat. i. p. 217 (1766).
Le grand Fou, Buff. Hist. Nat. Ois. viii. p. 372 (1781).
Le Fou tacheté, Buff. tom. cit. p. 376 (1781).
Le Fou de Bassan, Buff. tom. cit. p. 375 (1781).
Pelecanus punctatus, Sparrm. Mus. Carls. tab. 10 (1786).
Pelecanus maculatus, Gmel. Syst. Nat. i. p. 579 (1788, ex Buff.).
Sula alba, Meyer, Taschenb. deutsch. Vogelk. ii. p. 582 (1810).
Dysporus, Illig. (*Pelecanus bassanus*, Linn.) Prodr. p. 279 (1811).
Moris bassana (L.), Leach, Syst. Cat. M. & B. Brit. Mus. p. 35 (1816).
Morus bassanus (L.), Vieill. Nouv. Dict. xii. p. 39 (1817).
Sula major, C. L. Brehm, Vög. Deutschl. p. 812 (1831).
Sula americana, Bp. Comp. List, p. 60 (1838).
Dysporus bassanus (L.), J. F. Naumann, Naturg. Vög. Deutschl. xi. p. 14 (1842).
Le Fou intermédiaire, Lefèvre, Naumannia, 1851, part 4, p. 38.
Sula lefevri, Baldamus, Naumannia, 1851, part 4, p. 38, footnote.

Solan Goose, *Gannet*, English; *Sulaire*, Gaelic; *Fou de Bassan*, French; *Ganso-patola*, Portuguese; *Alcatraz*, Spanish; *Bou-grana*, Moorish; *Bass-Tölpel*, *weisser Tölpel*, German; *de Jan van Gent*, Dutch; *Hav-Sule*, *Tossefugl*, Danish; *Sula*, Færoese; *Kuksuk*, Greenlandic; *Sula*, *Hafsula*, Icelandic; *Sule*, Norwegian; *Hafs Sula*, *Sillebas*, Swedish.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 278, 986; Kjærb. Orn. Dan. taf. 51 B, Suppl. taf. 34; Naumann, Vög. Deutschl. taf. 278; Sundevall, Svensk. Fogl. pl. 55. figs. 4, 5; Gould, B. of Eur. pl. 412; id. B. of G. Brit. v. pl. 54; Schlegel, Vog. Nederl. pls. 322, 323; Roux, Orn. Prov. pl. 343; Audub. B. of Am. p. 326.

♂ *ad.* albus, capite et collo rufescente isabellino tinctis, remigibus nigris, caudâ cuneatâ: rostro pallidè livido-cæruleo, regione oculari nudâ nigricante: iride flavâ: pedibus virescentibus.

Juv. capite, collo et corpore suprà fumoso-nigricanti-fuscis albo guttatis, remigibus et rectricibus nigro-fuscis: corpore subtùs albido, fumoso fusco notato: rostro livido-fusco.

Adult Male (Bass Rock). Entire plumage pure white, except that the head and neck are tinged with warm cream-colour and the quills are black; tail cuneate; bill pale livid; blue space round the eye blackish;

iris yellow; legs greenish; webs brown. Total length about 30 inches, culmen 4·8, wing 18·8, tail 8·3, tarsus 2·7.

Adult Female (Bass Rock). Upper parts sooty blackish-brown, closely spotted with white, the spots on the rump larger, and the coverts next to the tail nearly all white; quills and tail blackish brown; head and neck like the back; underparts below the neck white, closely marked with sooty brown spots; bill dark horn-brown.

Young in down (Bass Rock). Covered with close down like short Swan's down, except on the face, which is blackish.

Obs. This bird is said to take three years to attain its full plumage. I am indebted to Mr. Small, of Edinburgh, for a series of five specimens showing the different stages through which it passes. The first is the young bird in down; the second the young above described; the third resembles no. 2, but has fewer white spots on the upper parts, the face and upper throat are nearly white, and the bill is paler; no. 4 resembles the adult, except that on the back there are patches of blackish brown, and the tail is blackish brown; and no. 5 is the adult bird above described.

This, the only species of the genus *Sula* which is found in Europe, is an inhabitant of Northern Europe and North America, ranging south, though only as a straggler, as far even as the coasts of Africa. With us in Great Britain it is tolerably common on many parts of our coasts, and breeds in several localities, notably on the Bass Rock, Ailsa Craig, and St. Kilda. In the south of England it occurs not merely as a straggler, but as a regular autumn and winter visitant, and it is said to be tolerably numerous on the South Devonshire coasts. Mr. Cecil Smith says that it remains all the winter off the Channel Islands, but never breeds there, as it does on Lundy Island, off the North-Devon coast. The breeding-stations in Great Britain which are at present tenanted are as follows:—Lundy Island, off the coast of Devon; the Skellig Islands, on the coast of Kerry; St. Kilda; the Stack of Suliskerry; Ailsa Craig, at the mouth of the Firth of Clyde; and the Bass Rock, in the Firth of Forth.

In the Humber district it is found off the coast, and stragglers are occasionally driven far inland. Sometimes large numbers are to be seen off Flamborough Head and elsewhere along the coast in the autumn. Mr. Robert Gray says (B. of W. of Scotl. p. 458) that it is an abundant species over the whole coast-line of the west of Scotland during the summer months. They usually make their appearance on the Ayrshire coast in February, and leave in October; but on the east coast some hundreds have been known to remain all the winter in the vicinity of the Bass Rock for three or four years in succession. It is said to winter even off the Orkneys and Shetland; and Dr. Saxby writes (B. of Shetl. p. 322):—"It is often said that the Gannet habitually breeds in the Shetlands; but I very much question the accuracy of the assertion, even though I have repeatedly seen the birds in the breeding-season upon the North Stack, upon which rock, as also upon the Outstack, they are thought by many fishermen to nest."

In Ireland it may be seen on most parts of the coast in summer and autumn; and Thompson asserts that it breeds on one of the Skellig Islands.

The Gannet is occasionally, though rarely, found in Greenland, and only as an accidental straggler; but Professor Newton says that it is very abundant in many localities in Iceland, and

has several breeding-places on islands, among which Grimsey, the Reykjanes Fuglasker, and some of the Vestmanneyjar are chief. According to Faber it remains there all the winter. It breeds numerously in the Færoes, the breeding-places being confined to the most western island of the group, Myggenæs, where they nest on Pujgarsdrengur and Fleatidrengur, two isolated stacks. It is found off the Norwegian coast; and, according to Mr. Robert Collett, it occurs during the herring fishery in winter and spring off the outer islands from Christiansand to Nordland, and in some places, especially on the fishing-grounds from Jæderen to Stat, in considerable numbers. A few remain over summer, though not to breed, on the west coast, and visit almost every autumn and winter the tract between Lindesnæs, eastward to the Swedish frontier. North of the Arctic circle it is rarer, but has been shot on Lofoten, and on both sides of the North Cape. In Southern Norway it is usually seen only after severe storms; and only three are known to have been captured in the Christiania fiord; but it has even been obtained on fresh water, as on the Store Leesjö, in Smaalehnene. Nilsson states that it is rare in Sweden, being only a straggler to the southern coasts. It is said to occur off Bohuslän from July to March, but only visits the Baltic as a rare straggler. I do not find any record of its occurrence on the Swedish or Finnish coasts of that sea; but Brehm mentions one instance of a specimen having been obtained in Mark Brandenburg; and Dr. Schalow states (J. f. O. 1870, p. 6) that one old male in full plumage was procured at Gross Schönebeck, near Joachimsthal, and is now preserved at Berlin. It never breeds in Denmark, but is not seldom obtained there, especially on the west coast of Jutland. Mr. Collin cites numerous instances of its occurrence; and Mr. Benzon also sends me particulars of adult and young examples sent to him from Ringkjœbing, Thisted, and several other localities. Mr. Cordeaux found it very common near Heligoland; and Naumann says that it not unfrequently visits the mouth of the Elbe.

Occasionally stragglers are found inland, usually driven in by stress of weather, and are, as a rule, picked up dead or thoroughly exhausted. Borggreve says that it has once been obtained at Neuwied, once in Mecklenburg, once in Oldenburg, and three times in Münsterland. It only visits the Dutch coasts in winter, usually after severe weather; and the same may be said respecting its occurrence off those of Belgium and France. M. Degland remarks that several individuals were killed on the 6th July 1825, near Douai, and in February of the previous year after some severe tempests more than 200 were found cast up dead on the coast near Abbeville. It is stated to be common off the coast of Portugal and Spain. Mr. Howard Saunders observed great numbers fishing off Cape Trafalgar in December; and Colonel Irby writes (Orn. Str. Gibr. p. 207), "During the winter season I always saw great numbers of Gannets in the Straits, especially close to Gibraltar, where, according to the wind, they might be noticed fishing on the leeward side of the Rock; and many a time have I watched them darting down from a considerable height on their prey, often disappearing quite under the water. On the wing, to an inexperienced observer, they appear like a large Gull. The immature birds in their dull spotted dress, perhaps through not attracting so much notice, seem to be less in number than the more conspicuous white adults with their black primaries. The earliest dates on which I observed this species near Gibraltar were on the 11th of November, 1870, and the 12th of October, 1871, the latest being on the 28th of March, 1872. I noticed many on the last date; but that spring was remarkable for the late stay of several northern-breeding species." The

Gannet but rarely enters the Mediterranean. It has been said to have been seen near Marseilles; but Jaubert doubts this statement. Oddly enough, Messrs. Danford and Harvie-Brown remark (Ibis, 1875, p. 431), "Bieltz mentions that this bird was once observed during winter in Transylvania."

It does not appear to range far down the coast of West Africa. Favier merely says (*fide* Colonel Irby) that it arrives off the coast of Morocco in October, and leaves during March, not being very numerous; but Dr. Carl Bolle records its occurrence now and again off the coasts of the Canaries. In South Africa it is replaced by *Sula melanura*, Temm. (*Sula capensis*, Licht.), which differs chiefly in having the tail black in the adult plumage.

The Gannet does not appear to visit Asia—unless perhaps in the extreme north-west, as it is said to occur off Novaya Zemlya; but it is found in North America, where it is said to breed in almost incredible numbers on the Gannet Rock, the North Bird Rock, and the Percé Rock near Gaspé, and the Gannet Rock near Mingan, in the Gulf of St. Lawrence; and in the winter season it wanders as far south as the Gulf of Mexico. I have occasionally seen it in the Bay of Fundy, where, Mr. Boardman informed me, it is resident, and common on the fishing-grounds. A few breed on the Gannet Rock near Grand Menan.

Having had but meagre opportunities of observing the habits of this interesting bird, I cannot do better than transcribe the excellent remarks published by Dr. R. O. Cunningham (Ibis, 1866, pp. 15–20) respecting its habits and nidification as observed by him on the Bass Rock:—"The form and appearance of this celebrated island have been so often and so elaborately described, that a very few words will suffice to say all that is necessary on the subject. It is about two miles distant from the southern shore of the Firth of Forth, and three from the venerable town of North Berwick, rises to the height of 420 feet above the level of the sea, and is formed of a huge mass of trap of a character intermediate between greenstone and clinkstone. Its sides rise bold and perpendicular; and on the east and west may be seen the opposite openings of a cavern 30 feet high and 170 feet long, which owes its existence to the hollowing agency of the sea. Its 'sloping acclivity,' to employ the words of the late Hugh Miller, 'consists of three great steps or terraces, with steep belts of precipice rising between;' of these 'the lowest is occupied by the fortress, and furnishes, where it sinks slopingly towards the sea on the south-east, the two landing-places of the island.' The middle, situated exactly over the cave, has furnished the site of the ancient chapel of the island, while the upper and largest was once occupied by the garden. The principal birds that breed on the Bass are the Solan Goose, the Foolish Guillemot (*Uria troile*), the Kittiwake (*Larus rissa*), the Cormorant (*Phalacrocorax carbo*), the Shag (*Phalacrocorax graculus*), the Razorbill (*Alca torda*), the Herring-Gull (*Larus argentatus*), the Common Gull (*Larus canus*), the Great Black-backed Gull (*Larus marinus*), and the Puffin (*Fratercula arctica*). The Black Guillemot (*Uria grylle*) is mentioned by Ray, but has not, I believe, been seen by subsequent observers; and the Peregrine Falcon (*Falco peregrinus*) and Eider Duck (*Somateria mollissima*), which used to build on the island, have for some time disappeared.

"The Solan Geese are met with in great numbers on all the several faces of the rock; and one or two colonies occur near the landing-places. Macgillivray estimates the number which he saw on the occasion of a visit to the island in 1831 at about twenty thousand; and, judging from

the multitudes I saw when I visited it in 1862, I do not think there has been any material decrease since that time. The Gannets make their appearance about the middle of February or beginning of March, and, as a general rule, take their departure in October. A few, however, seem to remain throughout the winter; but they are not unfrequently seen during that season by the fishermen of the Firth, and towards the close of last December I obtained a full-grown individual which had been caught in a herring-net. The nests were described by the older observers as built of sticks; but either they were mistaken or the Geese have changed their customs; for nowadays, as I can testify by personal observations, they are constructed entirely of grass and seaweeds, particularly the *Fucus digitatus* and other of the common Fucoids. They are built in the form of a flattened cone, the base of which 'is about 20 inches in diameter, with a shallow terminal cavity;' and their artificers exhibit great industry in collecting materials for them, tearing up grass and turf with their powerful bills, and frequently engaging in conflicts with one another during the process.

"They lay but one egg; but if it is removed another is deposited in its place. It is of an elliptical form, with a dull rough surface, and in its original state is white, but is almost always more or less patched with yellowish-brown dirt, although I have never seen it stained with blood, as is frequently the case with the egg of the American bird, according to Dr. Bryant. I have been informed on good authority that the albumen does not become white when it is boiled, but remains clear and colourless; but I cannot speak from personal knowledge of the fact. According to Macgillivray 'it is subjected to what might appear rough usage; for the bird in alighting, flying, or when disturbed by human visitors tosses it about and stands upon it.' This habit has probably given rise to the assertion that the egg is hatched by the foot.

"The Gannet is but little adapted for progression on land, its gait being an awkward waddle. Judging from the descriptions of Selby and Macgillivray, these birds appear to have been in a very amiable state at the time of their visits to the Bass; for the former states that during incubation, 'in consequence of being unmolested, they become very tame, and, where the nests are easily accessible upon the flat surface of the rock on the south-west side of the island, will allow themselves to be stroked by the hand without resistance, or any show even of impatience, except the low guttural cry of *grog, grog*;' while the latter author says that, when sitting, 'the Gannets usually allow a person to approach within three feet, sometimes much nearer, so that one may touch them. When one approaches them they merely open their bill, and utter the usual cry, or they rise on their feet and express some degree of resentment, but little apprehension of danger.' When I visited the island three years ago my experience was widely different; for the old birds manifested every symptom of displeasure, and even a young bird, but a few weeks hatched, squeaked angrily and made impotent demonstrations of self-defence with its soft little bill. Prof. Innes also, in a note to St. John's 'Natural History and Sport in Moray,' mentions (p. 204) an instance in which a young man suffered for his temerity in venturing to meddle with a gosling in the downy stage; for the infuriated parent made a swoop at his face, and, narrowly missing his eye, caught him by the nose. I can likewise bear witness that the bird is capable of inflicting a most severe bite with the razor-like edge of its mandibles; for on one occasion, when a live specimen was brought to me, it made a cut between two and three inches long on the hand of its captor.

"Macgillivray has well described the mode of flight of the Solan Geese in the following words:—'In launching from the cliffs, they frequently utter a single plaintive cry, perform a curve, having its concavity upwards, then shake the tail, frequently the whole plumage, draw the feet backwards, placing them close under the tail on each side, and cover them with the feathers. In some the feet were entirely covered, while in others parts of the toes were apparent. In flying, the body, tail, neck, and bill are nearly in a straight line, the wings extended, and never brought close to the body, and they move by regular flappings, alternating with regular sailings. In alighting, they generally ascend in a long curve, keeping their feet spread, and come down rather heavily, often finding it difficult to balance themselves, and sometimes, when the place is very steep, or when another bird attacks them, flying off to try a second time.' The Gannet appears to have considerable difficulty in taking wing when on low ground; and hence individuals which have flown inland and alighted are not uncommonly captured. Thus Willughby informs us that the bird he described 'was taken alive near Coleshil, a market-town in Warwickshire;' and many similar instances are on record.

"As has been truly said by a late eminent naturalist, 'the early and more recent records of the Gannet are full of fond inventions;' and nowhere is this assertion more fully borne out than in the extravagant accounts that have been given regarding its powers of diving. The late William Thompson, for example, in his admirable 'Natural History of Ireland,' states, on the authority of a postmaster at Ballantrae, in Ayrshire, that Gannets have been taken in nets at depths of 180 feet in that neighbourhood. Now it seems entirely inconceivable that a Gannet, if ever it penetrated to such a depth, could ever come to the surface again; and even if it were capable of doing so, it is extremely improbable, to say the least, that it would take such an amount of trouble to procure prey that might be obtained so much more easily. Several eminent authors have gone to the other extreme, and deny that the Gannet ever dives at all; but I can testify from personal observation that this is incorrect.

"Owing to the extreme power of dilatation which its œsophagus possesses, the bird is capable of swallowing fish of very considerable dimensions. Its food in the Firth of Forth and the other Scottish localities where it occurs, consists principally of herrings, and, in the English Channel, of pilchards. A specimen which I obtained last winter, and which was kept alive for a few days, was fed on herrings which had been previously extracted from the stomach of a Seal; these it swallowed very rapidly head foremost. Its powers of digestion seemed to be vigorous; for on examining its stomach after it was killed it was found to be nearly empty, with the exception of cod-hooks, which must have been swallowed some time previously and were considerably worn. Not rarely it becomes so gorged with food as to be unable to rise from the surface of the water, on which it reposes in a lethargic state; and while in this condition it may be easily run down and captured if advanced upon in a boat. It is scarcely necessary to mention that the statement of Pennant and other writers, that the Gannet possesses a gular pouch similar to that of the Pelican, and capable of containing five or six herrings, is entirely without foundation. The old bird, according to Macgillivray, at first feeds its young 'with a kind of fish soup prepared in its gullet and stomach, and which it introduces drop by drop, as it were, into its throat. But when its nursling is pretty well grown, it places its bill within its mouth and disgorges the fish entire or in fragments. They never carry fish to the rock in their bills.' The

cry of the young bird is a shrill squeak, while that of the old bird is hoarse and resembles the syllables 'carra carra' or 'kurra kurra' rapidly repeated. From one to two thousand of the young birds are killed annually for sale, and, after being plucked, obtain a price of from sixpence to a shilling each. Formerly, when they were held in greater value, they used to fetch considerably more: thus we find that in Ray's time they cost 1*s.* 8*d.* apiece. At one time they figured at the tables of the Scottish monarchs, and more recently were much esteemed by the citizens of Edinburgh and other towns, being roasted and eaten as a relish for dinner. Now, I believe, their consumption is chiefly limited to the lower classes; and I have been informed on good authority that, being parboiled and having their legs cut off, they are sold in considerable numbers to the Irish peasants who come over to Scotland at harvest-time."

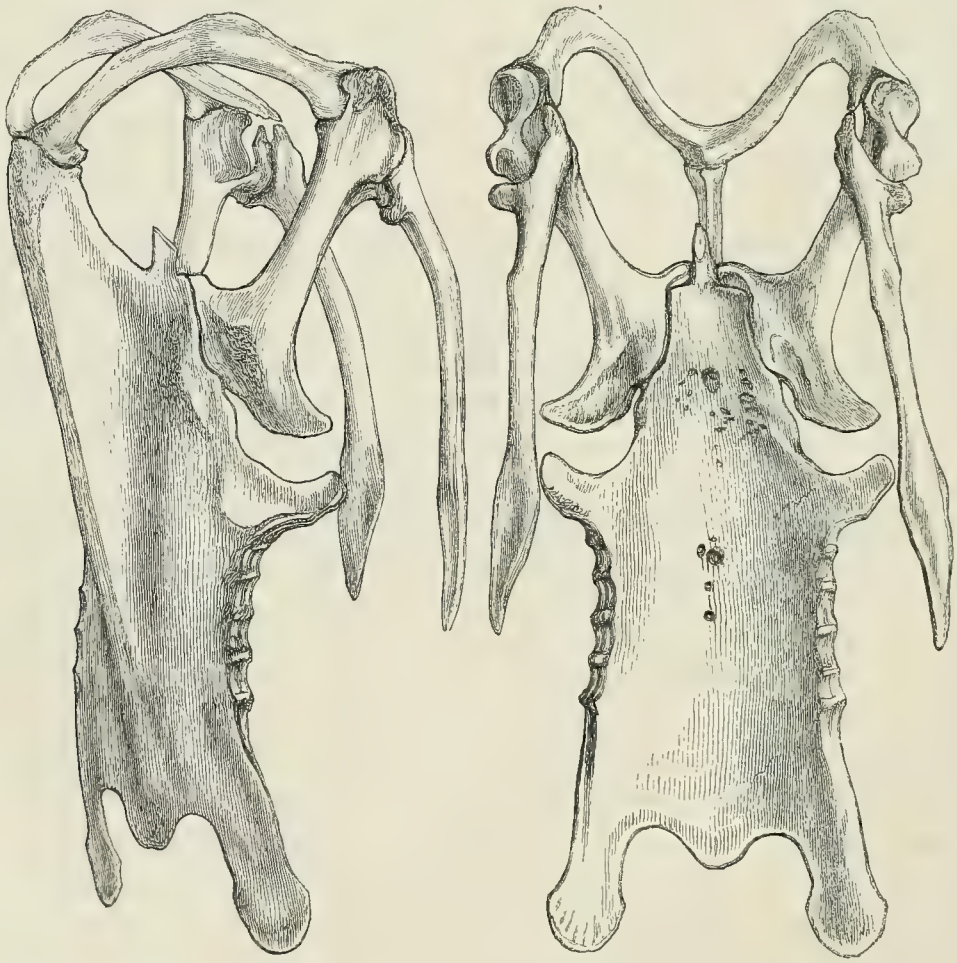
It has puzzled more than one observer to understand how the Gannet escapes injury when plunging, as it often does, violently into the water from a considerable height to strike fish; and a most interesting discovery, which throws much light on this question, has lately been made by my friend Mr. John Flower. This gentleman has kindly sent me the following notes, viz.:—

"I send you below the particulars which you wish to have as to the coracoids of the Gannet (*Sula bassana*). It was in December 1876 that my attention was first called to the peculiar nature of their articulation to the sternum; but it was not till August 1878, when I had an opportunity of mentioning the matter to Professor Rolleston, at Oxford, that it occurred to me that I had discovered something which was new, and that I became aware that the true object and significance of the very oblique articulation of the Gannet's coracoids have never yet been pointed out.

"To any one who has carefully examined the body of a Gannet it must be clear that if it were not for the wings, there would be very little of the bird which could offer any great amount of resistance to the water when it takes one of those very remarkable plunges which are so characteristic of the genus *Sula*. The beak, head, neck, and body seem to be specially shaped to suit the plunging habits of the species, and are most admirably adapted for passing easily through water. But the wings create a difficulty. The bird is a heavy one, weighing about seven pounds; and the wings, being necessarily large in proportion, have a span of over six feet. When at rest they project somewhat from the sides of the bird; and during the plunge they are forced, by the pressure of the water, tightly against the body and backwards towards the tail. Nearly the whole of the strain which is thus caused, and which must often be very considerable, especially when the Gannet is fishing in rough weather, is necessarily thrown upon the shoulder-joint; and but for the arrangement next to be described, it would probably often be sufficient to disable the bird. From the front part of the body of the sternum is developed a very large and powerful wedge of bone; and on the sides of this wedge the coracoids are articulated, not, as in nearly all other birds, at right angles, or nearly at right angles, with the axis of the sternum, *but in a direction nearly parallel with it.* When therefore the strain begins to be felt at the shoulder-joint, the coracoids slide slowly backwards, down the sides of the wedge of bone, and ease the strain. This allows the wings to perform a similar movement along the sides of the body, which forms a cone, round the sides of which the wings are wrapped. By this exceedingly simple and yet beautiful mechanical contrivance, of a wedge within a cone, the pressure of the water is gradually eased off, and reduced to nothing, and this without any undue or dangerous

strain being placed upon a single muscle or ligament. The very strong clavicles, and the thick coating of feathers which lie between the wings and the body, must both play an important part in easing off the effect of the blow caused by the bird striking the water. The clavicles being fused to the end of the ridge of the sternum, would act as a spring, much in the same way as the top joint of a salmon-rod; whilst the feathers would act as padding, and help to prevent any jar.

"I send you with this the breastbone of a Gannet, which will make the above description more intelligible. It is the identical breastbone which I had in December 1876. I presented it to the University Museum at Oxford; and Professor Rolleston has very kindly lent it to me for your use. If you decide to have it figured, I would suggest that you should have two drawings of it—one of the front, showing the direction of the articulation of the coracoids to the sternum, and one of the back, which will show better the shape and remarkable development of the wedge. The significance of the above peculiarities in the Gannet comes out more clearly if the sternum of the Gannet is compared with that of the birds most nearly allied to it, say with the Cormorant.



"The side view of the Gannet's sternum seems to me not less remarkable than the front and back. All the parts are enormously strong; and each clavicle, with its coracoid and the

projecting ridge of the sternum, forms a figure most beautifully designed for resisting either a push or a blow from the front, or a pull from behind, or from the sides. The wide spread of the coracoids in front, and the direction in which their pressure is exerted on the wedge, are also very beautiful pieces of mechanism."

The woodcut, representing the sternum of the Gannet, will illustrate the above remarks of Mr. John Flower.

The specimens figured are the adult and young birds above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.*; *b*, nearly adult; *c*, *jun.*; *d*, *juv.*; *e*, *pull.* Bass Rock (*Small*).

Genus PELECANUS.

Onocrotalus apud Brisson, Orn. vi. p. 519 (1760).
Pelecanus, Linnæus, Syst. Nat. i. p. 215 (1766).

The Pelicans, of which two are found in the Western Palæarctic Region, inhabit the Palæarctic, Ethiopian, Oriental, Australian, Nearctic, and Neotropical Regions. They, like their allies the Gannets, are essentially aquatic in their habits, frequenting rivers, lakes, and the sea-coast, and feeding entirely on fish, of which they devour large quantities; and they also carry a supply to their young in the large pouch which extends under their bill; they frequently traverse long distances thus laden with provender. They swim with ease and great swiftness, and fly with tolerable facility and speed, though they take wing heavily. Frequently they fly at great altitudes, describing large circles in the air. Their note is a deep, loud cry, which may be heard at a considerable distance. They breed in large lagoons or shallow lakes, constructing on the small islands or on a platform of reeds a large bulky nest of reeds and aquatic herbage, and deposit two or three rough chalky white eggs.

Pelecanus onocrotalus, the type of the genus, has the bill much longer than the head, straight, broad, the upper mandible flat, compressed towards the tip, which is sharply hooked, lower mandible forming two branches attached at the point, and sustaining a large membrane forming a dilatable pouch; space round and in front of the eyes bare; nostrils basal, elongated; wings long, broad, the first quill longer than the fourth, the second and third nearly equal and longest; tail moderately long, nearly even; legs short, strong; the feet webbed; the lower part of the tibia bare; tarsus short, stout; claws moderate.



J. & E. Leuteman lith.

Hanhart imp.

ROSEATE PELICAN.

PELECANUS ONOCROTALUS.

PELECANUS ONOCROTALUS.

(ROSEATE PELICAN.)

Onocrotalus, Briss. Orn. vi. p. 519 (1760).
Pelecanus onocrotalus, Linn. Syst. Nat. i. p. 215 (1766).
Onocrotalus phœnix, Less. Man. d'Orn. ii. p. 371 (1828).
Pelecanus roseus, Eversm. Add. ad Pall. Zoogr. Rosso-As. fasc. i. p. 29 (1835).
Pelecanus minor, Rüpp. Syst. Uebers. Vög. N.O.-Afr. p. 140, pl. 49 (1845).
?*Pelecanus giganteus*, A. E. Brehm, J. f. Orn. 1855, p. 94.

Pélican blanc, French; *Pelicano*, Portuguese; *Onocrotalo*, *Pellicano*, Italian; *Sassla*, Maltese; *Abu-djemel*, Arabic; *gemeiner Pelikan*, *Kropfgans*, German.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 87; Werner, Atlas, *Palmipèdes*, pl. 63; Frisch, Vög. Deutschl. taf. 186; Naumann, Vög. Deutschl. taf. 282; Sundevall, Svensk. Fogl. pl. 81. fig. 1; Gould, B. of Eur. pl. 405; Roux, Orn. Prov. pl. 342.

Ad. albus rosaceo tinctus, occipitis plumis elongatis cristam formantibus et plumis in gutture imo elongatis isabellino tinctis: remigibus primariis nigris, secundariis griseo-nigris in pogonio interno et extùs griseo-albis: scapularibus albis, nigro marginatis: plumis frontalibus medianis in cuspidem anticè protractis: rostro cæruleo, culminis lateribus rubro notatis: regione orbitali et loris nudis cum fronte flavidis, iride coccineâ: sacco gulari flavido: pedibus incarnatis.

Juv. suprà isabellino-cervinus griseo-fusco notatus, scapularibus griseo-fuscis: uropygio albido: caudâ sordidè griseâ: remigibus fuscis conspicuè griseo marginatis, tectricibus alarum fuscis sordidè isabellino variegatis: corpore subtùs sordidè albido.

Adult (Egypt). Entire plumage, excepting the wings, white tinged with rose-colour; feathers on the occiput elongated and pointed, forming a conspicuous crest; a tuft of feathers on the front of the lower neck elongated, rather stiff, and tinged with isabelline; primaries black; secondaries white or greyish on the outer web, and greyish black on the inner web; some of the white scapulars with narrow black margins; feathers on the forehead coming to a sharp point towards the culmen; bill blue-grey with a pink line down the side marked with red; bare space round the eye and sides of the lump on the forehead with the forehead itself yellowish; iris rich red; legs and feet pink. Total length about 46 inches, culmen 13·0, wing 25·0, tail 7·8, tarsus 4·5.

Young (Smyrna, 9th November). Upper parts generally dirty creamy buff, varied with greyish brown; scapulars greyish brown; rump dirty white; tail dull greyish; quills brown, broadly margined with greyish; wing-coverts brown, varied with creamy buff; underparts dirty white; feathers on the forehead coming to a point as in the adult.

Obs. I find that authors do not by any means agree as to the coloration of the soft parts of either this or

the Dalmatian Pelican; and it is probable that the colours may differ according to the season of the year. The adult of the present species has in the spring the forehead swollen so as to form a large fleshy knob, which is clearly shown in my Plate. The young bird is said to have the bill dull yellowish, marked with lead-grey on the edges, especially towards the tip, blackish on the chin; iris dark brown; naked space round the eye pale yellow. Captain Shelley describes one from Egypt as having the legs olive-black.

The Roseate or White Pelican (as it is frequently called) inhabits Southern and South-eastern Europe, but rarely ranging into Central or Northern Europe, North Africa, and Asia, probably as far east as Japan.

It has not been obtained in Great Britain; but it has been recorded from Sweden, though from all appearance it is doubtful if a really wild bird has been obtained there; for a specimen is said to have been shot in the autumn of 1859, a few miles north of Gaxahamn, which is supposed to have belonged to Kreuzberg's menagerie, wrecked near Öland. This is Mr. Meves's remark; in all probability the same specimen is referred to by Professor Liljeborg (Up. Vet. Soc. Årsskr. 1860, p. 288). An old male is also stated to have been shot on the 8th June 1850, on the Rämen lake, in Dalecarlia. According to Dr. Palmén it has once been killed in Finland; for a young example was shot in the early spring of 1839 in the parish of Karis, in Western Nyland. In Russia, according to Sabanäeff, it does not range above Sarepta; but Severtzoff once obtained it in the Voronege Government, and one was procured in March 1860 near Rosloff, in the Smolensk Government. According to Mr. Taczanowski the White Pelican is met with accidentally in Poland. In the Warsaw Museum are two specimens—one killed near Lomza, and the second in the Lublin Government, besides which, he adds, he knows of several instances of its occurrence in other parts of the country. It is a very rare straggler to Northern Germany. Borggreve says that it has been twice obtained near Danzig, once in Posen, once in Silesia, and once on the Moselle. In Denmark it has occurred on several occasions. Mr. Collin says that he was informed by Mr. Bendsen, of Œrö, that one was shot at Traneskjær Castle, in the Borgsö, in the early winter of 1821–22. It is also said to have been shot at Ravsted, in Schleswig, in the summer of 1857, at Frederiksstad, once on Fohr, and twice at Widau. As above stated, it has been met with in Western Germany; and Malherbe says that there is a specimen in the Metz Museum which was killed near there on the 4th October 1835. It does not appear to have straggled to Northern France; but it is found every now and again in the southern portion of that country, usually at rare intervals, and especially about the Etang de Berre and the mouths of the Rhone; and Lacroix states that it has been obtained in the French Pyrenees. It is occasionally seen in Portugal, but has not been recorded from Spain, and is, on the whole, much rarer in South-western than in South-eastern Europe.

In Italy its apparitions are irregular; but sometimes it is seen in considerable numbers, especially on the Mincio, the Po, and the Adriatic; and Mr. A. B. Brooke says (Ibis, 1873, p. 345) that it has been obtained, though rarely, in Sardinia. Malherbe records it as of accidental occurrence in Sicily. In the autumn of 1831 a young one was shot near Messina; and in May 1834 five adults were killed in the same locality. In Malta, Mr. C. A. Wright says (Ibis, 1864, p. 154), it is "accidental. In 1848 a great many were driven on this island during a violent gale of wind from the north-east, and many were shot at Sliema, St. Julian's, and other

places on the north coast. In July 1859, after a gale from the north-west, a male in full breeding-plumage was shot at Marsascirocco. At the end of October and beginning of November 1861 several were seen, and two or three shot (young birds)." To this he adds (Ibis, 1865, p. 466) that a Pelican was seen on the Marsa on the 10th June 1865. In Southern Germany it is common on the Lower Danube—but does not now occur in Bohemia, though it is said to have been found there formerly. The late Mr. E. Seidensacher informed me that it has occurred more than once near Cilli, in Styria; and Messrs. Danford and Harvie-Brown, in their paper on the birds of Transylvania (Ibis, 1875, p. 430) say it is "rare, but has occurred at Hatzeg and at Reps, on the Alt near Hermanstadt, the Maros near Deva, the Külkül near Schässburg, &c. The specimen in the Klausenburg Museum was killed near the town. Boner (in his work, 'Transylvania: its Products and its People'), alluding to the periods of migration, says:—'At such times the Swan, the Cormorant, and the Pelican have also been seen on the rivers; and Lieutenant * * * came home once bringing with him seven of the latter that he had shot.' Stetter mentions that eleven were killed in one day at Hermanstadt; and Herr Ottó, that fifteen appeared on the Szamos in June 1864, and remained till the end of the month." In the marshes of the Lower Danube the Roseate Pelican is tolerably common, and quite numerous in some localities. Messrs. Sintenis record it from the Dobrudscha; Mr. Robson obtained it in the Sea of Marmora; and it is recorded from the Black Sea; but I have but meagre data respecting its occurrence in Asia Minor, where, doubtless, it is not rare. It is found in Greece; Krüper says that it winters near Athens, and leaves there in the spring. It winters also in the Cyclades and Macedonia; Lord Lilford met with it in Epirus; and I have examined a specimen from Smyrna, in Asia Minor, whence it has also been recorded by Strickland. Canon Tristram does not appear to have met with it in Palestine; but it is common in North-east Africa. Von Heuglin says that it arrives in Egypt together with *Pelecanus crispus*, but is, as a rule, less numerous than that species, though in some seasons the contrary may be the case. It ranges further south than *Pelecanus crispus*, and occurs on the Lower and Central White Nile, and even in Abyssinia, being also, in all probability, found on the Blue Nile. Captain Shelley writes (B. of Egypt, p. 293):—"This Pelican is very abundant in Egypt and Nubia. On the 20th of April 1870, below Edfoo, we met with an immense flock of several thousands, passing low along the river on their way north; and although fired at several times, they still kept streaming onwards in one continuous flock, without diverging from their course." In North-west Africa, however, the Roseate Pelican is scarce. Loche states that it is merely an accidental straggler to Algeria. How far south the present species ranges in Africa I cannot say; but Dr. Hartlaub records its occurrence on the Slave Coast in West Africa, and on the east coast it is said to range south to Mozambique. In South Africa, however, there appears to be, so far as I can judge, a fairly separable smaller form (*Pelecanus mitratus*, Licht.). Dr. Sclater (P. Z. S. 1868, pp. 264–269) and Mr. Elliot (P. Z. S. 1869, pp. 571–591) have both written articles on the genus *Pelecanus*, which contain much valuable information.

Mr. Elliot separates *Pelecanus minor*, Rüpp., from the present species, and unites the former with *Pelecanus mitratus*, Licht.; but he expresses a doubt (P. Z. S. 1869, p. 581) as to whether it really is specifically separable from *Pelecanus onocrotalus*, of which, indeed, it can only be regarded as a small though fairly separable race. Von Heuglin, on the other hand,

says that *Pelecanus minor*, from Egypt, cannot be separated from the Roseate Pelican, and gives the measurements of several specimens in confirmation of his opinion. On the other hand, he separates *Pelecanus mitratus* as a specifically different South-African form, stating that he has examined the type in the Berlin Museum, from South Africa, and adds that it "has a comparatively broader bill, the base of the upper mandible being more even, and there is a distinct, sharply defined furrow along the edge of the culmen-plate." Unfortunately I have not been able to collect a series of specimens for examination, so as to be able to decide for myself; but it appears to me, judging by a careful perusal of what both these gentlemen say, that Von Heuglin's view is the correct one; and I have therefore followed him in treating the South-African form as distinct, and have united *Pelecanus minor* with *Pelecanus onocrotalus*.

I have not been able to compare a series of specimens of the Roseate or White Pelican from Asia with our European *Pelecanus onocrotalus*; but Dr. Sclater (P. Z. S. 1868, p. 266) says that there can be no doubt that the Indian bird is referable to *Pelecanus mitratus*, and is separable from our European bird. This bird is found in India, China, and Japan.

How far east the true *Pelecanus onocrotalus* ranges I cannot say, but probably as far as the Caspian.

Mr. A. O. Hume has described (Stray Feathers, v. p. 491), under the name of *Pelecanus longirostris*, a Pelican from Dacca, which, he says, is "like *Pelecanus onocrotalus*, but with a longer and narrower bill, and with the rib of the upper mandible much more raised." I can venture no opinion as to the validity of this species, as I have not had a specimen for comparison. The measurements given are—length 4 feet 6 inches, tail 8·0, wing 27·0, bill at front from the margin of the feathers to the end of the nail 18·1.

In general habits the present species does not appear to differ from the Dalmatian Pelican, with which species it is so often found consorting.

The brothers Sintenis have published some excellent notes on an expedition they made to a breeding-place of the Roseate Pelican in the delta of the Danube, which has been translated in the 'Zoologist' (1879, pp. 243–260) *in extenso*. These gentlemen found both *Pelecanus crispus* and *Pelecanus onocrotalus* breeding in the same marshes, but keeping apart in separate nesting colonies, though evidently differing but little, if at all, in breeding-habits. Speaking of a nesting colony of the latter species, they say (p. 257):—"The largest islands may have been occupied by twenty or thirty breeding birds; but quite small ones, sufficing only for one bird each, were quite as numerous. Now these islands are more or less composed of reed-fragments, often without any fresh vegetation, often also bordered by green rushes and other high plants. The aspect of the large white eggs shining through the green all round is very charming when seen from the middle of the lake. But when closely inspected the places look very dirty and slovenly. The smell was bearable, the process of fermentation and putrefaction being generally over—a sign that the birds had not laid since the 7th instant. Generally there were two eggs in a nest; but there were also plenty of single ones. Nearly half as many eggs as were lying on the islands were floating on the surrounding water. The latter keeps sending up air-bubbles, by which it is kept in constant commotion, no doubt caused by the substances putrefying at the bottom. The eggs were in all stages of hatching; but in most of them the young birds were fully developed, so that we had some trouble to find a number which could yet be blown. The

eggs which our *chasseur* had taken on the 7th were, on the average, far less advanced; and it does not seem to us at all improbable that the heat of the sun may have had some influence upon the abandoned eggs, at least to a certain extent. Our doubts as to the species of Pelican were gradually set at rest. Almost on every island, perhaps with the exception of five or six only, there were lying beside the eggs putrefying and putrefied young specimens of *Pelecanus onocrotalus* in down—not a single *Pelecanus crispus*. This, in connexion with the fact that on the 7th instant our *chasseur* had shot the four *Pelecani onocrotali* upon their nests, makes us certain of the genuineness of the eggs."

Eggs of this species in my collection do not differ from those of *Pelecanus crispus*, either in size or general appearance.

The specimen figured is an adult bird which is now living in the Zoological Gardens, Regent's Park; and it was drawn by Mr. Keulemans early in May, when in full spring dress.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. B. Tristram.

a, juv. Smyrna, November 9th.

E Mus. G. Ashley Dodd.

a, b, adult. Egypt (*G. A. D.*).

E Mus. Brit. Reg.

a, ♂ ad. Europe. *b, ad.* Moldavia. *c, juv.* Africa.



J.G.Keulemans lith

Hanhart imp

DALMATIAN PELICAN.

PELICANUS CRISPUS.

PELECANUS CRISPUS.

(DALMATIAN PELICAN.)

Pelecanus onocrotalus, Pall. Zoogr. Rosso-As. ii. p. 292 (1811, nec Linn.).
Pelecanus crispus, Bruch, Isis, 1832, p. 1109.
Pelecanus patagiatus, C. L. Brehm, Vogelfang, p. 361 (1855).

Pélican crépu, French; *krausköpfiger Pelikan*, *Riesen-Pelikan*, German; *Baba-ptitza*, *Barboussia*, Russian.

Figuræ notabiles.

Naumann, Vög. Deutschl. taf. 283; Gould, B. of Eur. pl. 405.

Ad. suprà sordidè albus vix griseo tinctus: nuchæ plumis elongatis filamentosis crispis: fronte plumosâ marginatâ: remigibus nigricantibus, secundariis intimis albo marginatis et ad basin albis: tectricibus alarum et scapularibus versus apicem nigricantibus: caudâ griseâ, scapis fuscis: corpore subtùs albido, plumis in gutture imo elongatis, plagâ gutturali flavicante, regione oculari incarnatâ, iride margaritaceâ: rostro plumbeo-griseo, lateraliter rubro notato: sacco gulari flavido: pedibus griseis.

Juv. fusco-griseus, nuchâ haud cristatâ, sacco gulari griseo.

Adult (Limacol marshes, Cyprus). Upper parts generally dull white with a greyish or bluish-grey tinge; feathers on the nape elongated and very soft, feathers on the forehead coming to an even line across; shafts to most of the wing-coverts and scapulars blackish, except at the base; quills blackish brown, the inner secondaries margined with dull white and white at the base; tail greyish, the shafts of the feathers dark brown; underparts dull white; the feathers on the lower throat and breast elongated; a patch on the lower throat yellowish; bare space round the eye flesh-coloured; iris greyish; bill blue-grey marked with red along the side; pouch yellow; legs lead-grey. Total length about 60 inches, culmen 14·3, wing 26·3, tail 7·5, tarsus 4·7.

Young. Resembles the young of *Pelecanus onocrotalus* in being brownish grey; but the feathers at the base of the bill come to an even line across the forehead, and not to a point; head devoid of crest; pouch greyish.

The present species inhabits Southern, especially South-eastern Europe, North Africa, and Asia as far east as India. It has not been met with straggling so far north as the Roseate Pelican, and has not been observed in Scandinavia, Great Britain, or France; and though Boeck says that it has occurred once near Danzig, it does not appear to have been observed elsewhere in North Germany. It has not been recorded from Portugal; nor did Colonel Irby or Lord Lilford meet with it in Spain; but Mr. Howard Saunders says that it has been obtained at Valencia and in the Balearic Isles. According to Salvadori there is no proof that this Pelican has ever been met with in Italy; but it is found in South-eastern Germany, Greece, and Turkey. Messrs.

Danford and Harvie-Brown remark (Ibis, 1875, p. 430) that it is very rare in Transylvania; a male was killed at Batiz, on the Strell, in 1850, by Herr Stetter. It is common, however, on the Lower Danube, and breeds numerously in the delta of the river. In Southern Russia this Pelican is tolerably widely distributed, wintering on the southern shores of the Black Sea, and passing northwards in large flocks in the early spring, nesting also along the shores of the Sea of Azoff. In the breeding-season it ranges tolerably far north in Russia. It is said to have been met with near Jaroslaf in 1865; and Bogdanoff states that it nests as far up as the Samarskaya Lukar, occasionally occurs in the Spask and Christopol districts in the Kazan Government, and migrates along the Kama as far as Meselinsk. One was killed some years ago in the Itkul lake, in the Kaslinsky Ural; in 1856 one was obtained near Ekaterinburg; and again in 1860 several were seen there, and in 1867 several near Tagila. According to Artzibascheff it is very common on the Sarpa and all along the Volga from Tzaritzine to the Caspian. In Asia Minor and Greece it is tolerably common; Dr. Krüper says (J. f. O. 1875, p. 284) that "single individuals were observed near Smyrna, but it does not seem to breed there. In Greece it is found breeding on the lagoons near Missolonghi and the islands at the mouth of the Aspropotamus. The nests, 1–2½ feet high, are built close together on the banks of the islands, and constructed of pieces of reeds and rushes. The breeding-time begins as early as February." Canon Tristram possesses a specimen from Cyprus; and he met with it in Palestine, where he saw an immense flock within sight of Mount Carmel. In North-east Africa this Pelican is numerous, more so probably than the Roseate Pelican. Captain Shelley (B. of Egypt, p. 293) speaks of it as being "abundant throughout Egypt and Nubia, frequenting the sandbanks in the river, often in large flocks. It appears to be more plentiful than the other species of Pelican, and was the only one I met with in the Fayoom, where I frequently killed specimens." Von Heuglin says that it visits the Fayoom in huge flocks in the winter, and winters between Alexandria and Port Said, but he never saw it in Nubia. It does not appear to range below Northern Africa, and, according to Loche, is of very rare and accidental occurrence in Algeria.

In Asia it ranges tolerably far east. According to Mr. Blanford (Eastern Persia, ii. p. 299) this Pelican is "abundant on the coast of Baluchistan, keeping to the bays and inlets. The specimen obtained, for which I am indebted to one of the officers belonging to the telegraph, is a fine female. This species is found also on the Caspian; and De Filippi gives it, doubtfully, from Lake Gokscha. I saw a few Pelicans, at a distance, on the Lakes of Niríz and Shiráz, but of course could not determine the species."

Mr. Hume writes (Stray Feathers, i. p. 288):—"I have already noticed how wonderfully abundant this species is in Sindh and along the whole Mekran coast. This is the Pelican that the fishermen on all the inland waters keep tame. As with the Herons, so with the Pelicans, they generally sew up the eyes, and fasten them by a string tied to the leg to the roots of some bunch of rushes or a stake driven in below water-level. They thus serve as decoys to other water-fowl, who, knowing how wary Pelicans usually are, readily settle where they see one or more of these birds sailing slowly about backwards and forwards, and are thus netted or captured in other ways. These Pelicans serve the fishermen, who are fowlers also, in another way: they skin them carefully, and cutting away the abdomen, in fact the greater portion that would be below water-level in the live bird, line the skin with a frame of thin basketwork. They are

very clever in mounting the birds, especially in dyeing the pouch and colouring it with turmeric so as to look exactly as in the live bird, and also in imitating the eyes, which they manufacture out of lac. When ready, the fisherman places it on his head, gets into the water, and progresses slowly and softly, making the skin which conceals his head sail about in the water in the most natural way imaginable, until he reaches the spot where some of his blinded and tethered Pelicans are surrounded by wild water-fowl, which he adroitly pulls under water without in the slightest degree disturbing the rest. Sometimes, we are told, he drags with him a piece of double rope, twisted, with a stone or weight fastened to it. Each bird as it is caught has the neck thrust between the twists of the rope; and thus as many as twenty will be captured at a single trip. Some have a light cord fastened round the loins, between which and their bodies they thrust the neck. In either case they kill the duck almost instantaneously by a sharp twist of the neck. I never myself saw the ducks thus caught; but a man put on the Pelican helmet, and made it sail about before me in such wise that, even when quite close, it was difficult to believe that it was not a living bird."

Mr. Butler remarks that he saw this Pelican between Cutch and Pacham, on the western coast of Kattiawar, and that it also occurs as far east as the Ganges Doab, where he shot it near Etawah.

How far east it ranges I cannot say. Swinhoe affirms that it occurs at Amoy; but MM. David and Oustalet refer the species obtained by Swinhoe to *Pelecanus philippensis.*

I have seen the Dalmatian Pelican as well as its ally *Pelecanus onocrotalus* on the Lower Danube, but had but little opportunity of observing its habits. I used generally to see them ranged in a long row along the banks of the Danube, where they used to allow us to approach tolerably close, and would take wing only when we were well within gunshot range.

Mr. Artzibascheff (Exc. Orn. Sarpa, pp. 93–99), who visited the breeding-places of this Pelican on the Sarpa, gives an excellent account of its habits and nidification, which I translate as follows:—"The Dalmatian Pelican nests on some of the lakes of the Southern Sarpa. When I was there they made choice of the Khana and Tsaga-nour, constructing a huge nest of reeds and aquatic herbage, which they frequently bring from a considerable distance; and it is a queer sight to see these birds flying and carrying a large bundle of reeds in their beaks. The nest is built in a shallow part of the water, without being always near the rushes. On this nest of reeds, which is not unfrequently 1½ metre above the surface, one can see the separate nesting-spots where each female deposits her eggs; and I have seen one of these rookeries tenanted by thirty families or more, which presents a curious sight whilst the birds are sitting. The eggs are deposited in April or May, and are generally two or three, and but rarely four in number.... When fresh laid, the eggs are always bloody; so that it probably causes the female more or less pain to lay them.

"When hatched the young are quite naked and very peculiar in appearance. I have been astonished at the little love exhibited by the old birds for their offspring, as, more than once, on coming near a *moste* of Pelicans (*moste* being the Russian for bridge, and the nest is called by that name on account of its resemblance to a bridge) and firing a shot, the old birds have left their young, frequently without returning, although, as a rule, they are not very wild, and can be easily approached. On my first journey to the Calmuck steppes I found three of these nests

or 'bridges' of the Pelicans on the Khana lake; and as I remained there some time I had a good opportunity of observing their habits. As this lake contains no fish, the Pelicans used to go to the Volga to fish, frequently to a distance of 100 versts (seventy miles English) from their nest; and I have seen them return with their pouch crammed with fish. Usually the males forage for the females when they are sitting; but when the young are hatched both parents go off to fish. On approaching the nest the fetid stench from the half-rotten reeds and the quantities of excrement is suffocating. . . . . I have frequently caught these birds by placing a trap in their nests or on places where they usually rest. The Pelican has an easy flight, and traverses immense distances, often rising to a great altitude in a spiral flight, now flapping its wings, and now sailing along; and I have usually observed on approaching the nest of *Pelecanus crispus*, and on firing a shot, that they immediately rise high in the air, describing wide circles until lost to view. Their flight, though easy, is rather heavy, especially on taking wing; but when on the water they can rise straight up. When flying, they draw in their head, so that their big pouch seems to belong to the neck; and occasionally they open their beak, and the wind filling the pouch makes them look very comical. They swim with great ease, drawing in the neck and curving the back; and I have been astonished at their swiftness. Once I pursued a winged bird in a boat rowed by two first-rate rowers for more than an hour; and it doubled and turned so that it tired my men out; and had I not shot it again, I should have lost it. The Pelicans never plunge; but when they see a fish as they swim along, they dip their head and catch it. As is well known, they often fish in company; and I have often seen this curious sight of the birds combining together for that purpose. They collect in a shallow bay, and arrange themselves in perfect order, the two species often making common cause. The Cormorants, their inseparable companions, do not fail to join in the feast; and the Gulls, Terns, and other fish-eating birds are sure to put in an appearance; and when all have taken up their posts the fishing commences. The Pelicans, arranged in a semicircle, give the signal, approach the shore, striking the water with their wings and plunging in their heads, whilst their faithful friends the Cormorants, as an advanced guard, plunge again and again, and create terror amongst the fish so as to render them an easy prey; and as they approach the shore the booty becomes richer. It is a most bizarre scene; for Pelicans, Cormorants, Terns, and Gulls are mixed pell mell, the last adding to the strangeness of the scene by their wild discordant cries. The Pelicans leave the water with their pouches crammed with fish; and if it is the breeding-season they go to share their booty with their young, or with the females if the latter are sitting; but when this is not the case they retire to some sandbank to digest their meal in quietude and indolence. When the peasants see the Pelicans fishing thus, they say 'Babi tianoutt' (that is, 'the Pelicans are casting their nets'). The note of the Pelican is a deep loud cry.

"The Pelicans of these parts and on the shores of the Caspian are not shy; and when out in a boat I frequently approached within fifty or sixty paces of an immense flock seated on the river-bank. Directly a shot is fired they rise in the wildest confusion: and one can kill a dozen at a shot; for they sit so close together that they cannot all take wing at once; and if approached by land with a dog, several may be caught. These birds destroy vast numbers of fish; and a reward should, I think, be given for them, as they are so numerous at the mouth of the Volga as to prevent the fish from entering this river, except where the water is deep. . . . . When amongst

the steppe Calmucks they often requested me to shoot Pelicans for them, which they devoured with avidity, in spite of their repulsive flesh; indeed there is nothing that these men cannot swallow."

Mr. W. H. Hudlestone, who visited the breeding-places of this Pelican in Western Greece, says (Ibis, 1860, p. 395):—"Time was, and not so long ago, when *Pelecanus crispus* lived in hundreds all the year round, from the rocky promontory of Kourtzolari, hard by the mouth of the Acheloüs, on the western extremity of the lagoon, to the islands of Ætolico, up its northern arms, and, on the east, to the great mud-flats which mark the limits of the present delta of the Phidaris. Now-a-days a solitary individual may be seen fishing here and there throughout the lagoon; but the small remnant of this once mighty host have made their last stand upon the islands which divide the Gulf of Procopanisto from the Gulf of Ætolico. Here, towards the end of February last, the community of Pelicans constructed a group of seven nests—a sad falling off from the year 1858, when thirty-five nests, the remains of which had not then disappeared, were grouped in contiguous proximity upon a neighbouring islet. It needs not the nose of a pointer to discover the locality, even if the large white birds themselves were not a sufficient guide. As we approached the spot in a boat the Pelicans left their nests, and, taking to the water, sailed away like a fleet of stately ships, leaving their newly built establishment in possession of the invader. The boat grounded in two or three feet of mud; and when the party had floundered through this, the seven nests were discovered to be empty. A fisherman had plundered them that morning, taking from each nest one egg, all of which we of course recovered. The nests were constructed in a great measure of the old reed palings used by the natives for enclosing the fish, though with these were mixed such pieces of the vegetation of the islet as were suitable for the purpose. The seven nests were contiguous, and disposed in the shape of an irregular cross,—the navel of the cross, which was the tallest nest, being about 30 inches high, the two next in line on each side being about 2 feet high, the two nests forming each arm of the cross a few inches lower, and the two extremes at either end being about 14 inches from the ground. These latter, it is presumed, were intended for the junior partners of the firm, in the same way that the great bear of nursery tales has a big seat, his wife a middling seat, and the little bear a small seat. The eggs are chalky, like those of the Pelecanidæ generally, very rough in texture, and some of them much streaked with blood." Messrs. Elwes and Buckley also write (Ibis, 1870, p. 335) as follows:—This Pelican is "common in Macedonia, where we saw it in the Gulf of Salonica and about the mouth of the Vardar. We were told that Pelicans bred in the great marsh of Janitza, which is quite impenetrable, except in one or two narrow channels. On the 11th of April we visited a lagoon which runs back from the Danube three miles above Rassova, whither a great number of Pelicans resort to breed. We had much trouble in getting a boat, as the Circassians who lived there would not allow us to go in theirs; but at last we brought a dug-out canoe in a cart from Rassova, and launched her on the lake, which was surrounded by a deep bed of tall reeds. We paddled up to the top of it, disturbing numbers of Geese, Grebes, and Ducks, and came at last to the breeding-place of the Pelicans. The nest consists of a shallow depression in a large strong platform formed by reeds broken down and heaped together in the water; and on this great heap of decaying matter the eggs were laid. Many of the nests contained two or three; but all of them were quite fresh, and in some instances covered with

bloody marks, as if they had cost a severe effort to lay. The old birds, when disturbed by our approach, flapped off heavily and began soaring about above us. It is wonderful to see the ease and grace with which they fly when once fairly on the wing, mounting up with hardly a motion of the wings until almost out of sight, and soaring round and round like Vultures."

Eggs of this Pelican in my own collection are white, the surface being chalky and rough; and, like those of *Pelecanus onocrotalus*, most of them are marked with blood. In size they vary from $3\frac{2}{4}\frac{1}{0}$ by $2\frac{1}{4}\frac{1}{0}$ to $3\frac{2}{4}\frac{2}{0}$ by $2\frac{1}{4}\frac{4}{0}$ inches.

The specimen figured is one alive in the Zoological Gardens, at Regent's Park; and the one described is in the collection of Canon Tristram.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. B. Tristram.

a, ad. Limacol Marshes, Cyprus, 1863.

E Mus. Brit. Reg.

a, ad. Southern Europe.

Order IV. HERODII.

Family ARDEIDÆ.

Genus ARDEA.

Ardea, Brisson, Orn. v. p. 392 (1760).
Tantalus apud Linnæus, Syst. Nat. i. p. 241 (1766).
Herodias apud Boie, Isis, 1822, p. 559.
Ardeola apud Boie, ut suprà.
Lepterodatis apud Ehrenberg, Symb. Phys. Aves, fol. *m* (1828).
Nycticorax apud Ehrenberg, ut suprà.
Cancrophagus apud Kaup, Natürl. Syst. p. 42 (1829).
Buphus apud C. L. Brehm, Vög. Deutschl. p. 589 (1831).
Egretta apud Bonaparte, Comp. List, p. 47 (1838).
Erodius apud Macgillivray, Man. Brit. B. ii. p. 134 (1842).
Botaurus apud Macgillivray, tom. cit. p. 125 (1842).
Garzetta apud Bonaparte, Consp. Gen. Av. iii. p. 118 (1857).
Bubulcus apud Bonaparte, tom. cit. p. 125 (1857).

The Herons are very widely distributed throughout the world, being found in the Palæarctic, Ethiopian, Oriental, Australian, Nearctic, and Neotropical Regions, seven species inhabiting the Western Palæarctic Region.

They frequent marshy and wet localities, the sea-coast, the banks of streams and lakes, and large marshes, and are, as a rule, gregarious, even during the nesting-season. They wade into the water in pursuit of their prey, which consists of fish, frogs, insects, and occasionally small mammals. Their flight is sedate and slow, but tolerably easy; and they frequently traverse considerable distances on the wing. Their cry is a deep, harsh call, which is usually uttered when the bird is flying. They breed in colonies, placing their nests either on the ground or on high trees, the nests being constructed of sticks and twigs, and lined with grasses, wool, &c. They deposit several bluish-white or pale-blue eggs.

Ardea cinerea, the type of the genus, has the bill longer than the head, strong, straight, tapering to a point, gape-line straight; nostrils linear, basal; space in front of the eye bare; wings large, the first four quills nearly equal; tail short, even; legs long, slender, the tibia bare on the lower third; tarsus long, anteriorly scutellate; toes long; claws moderate, curved, acute, that on the middle toe serrated on the inner edge; plumage soft, full; head with a long crest, and the feathers on the fore part of the back much elongated, with close filaments.



COMMON HERON

ARDEA CINEREA.

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ARDEA CINEREA.

(COMMON HERON.)

Ardea, Brisson, Orn. v. p. 392, pl. xxxiv. (1760).
Ardea cristata, Brisson, tom. cit. p. 396, pl. xxxv. (1760).
Ardea cinerea, Brisson, tom. cit. p. 403 (1760).
Ardea nævia, Brisson, tom. cit. p. 410 (1760).
Ardea cinerea, Linn. Syst. Nat. p. 236 (1766).
Ardea major, Linn. op. cit. p. 236 (1766).
Ardea rhenana, Sander, im Naturf. xiii. p. 195 (1779).
Le Héron commun, Buff. Hist. Nat. Ois. vii. p. 343 (1780).
Ardea johannæ, Gmel. Syst. Nat. i. p. 629 (1788).
Ardea cineracea, C. L. Brehm, Vög. Deutschl. p. 580 (1831).
Ardea brag, Is. Geoffr. St.-Hil. in Jacquem. Voy. dans l'Inde, iv. p. 85 (1844).
Ardea leucophæa, Gould, P. Z. S. 1848, p. 58.
Ardea cinerea major, A. E. Brehm, Verz. Samml. C. L. Brehm, p. 12 (1866).
Ardea cinerea media, A. E. Brehm, ut suprà (1866).
Ardea cinerea minor, A. E. Brehm, ut suprà (1866).
Ardea cinerea brachyrhynchos, A. E. Brehm, ut suprà (1866).

Chorra-ghlas, Gaelic; *Heron huppé*, French; *Garça real*, Portuguese; *Garza*, Spanish; *Airone cenerino*, Italian; *Russet imperial*, Maltese; *Bou-auk*, Arabic; *Aishoush*, *Bou-auk*, Moorish; *Fisch-Reiher*, *grauer Reiher*, German; *blaauwe Reiger*, Dutch; *Graa-Hejre*, *Fiske-Hejre*, Danish; *Hegri*, Færoese; *Hejre*, *Hegre*, Norwegian; *Grå häger*, Swedish; *Harmaa-haikara*, Finnish; *Tschepura*, *Zaplja*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 755, 787; Werner, Atlas, *Coureurs*, pl. 23; Kjærb. Orn. Dan. taf. xxxii.; Frisch, Vög. Deutschl. taf. 198, 199; Fritsch, Vög. Eur. taf. 42. fig. 2; Naumann, Vög. Deutschl. taf. 220. figs. 3 & 43; Sundevall, Svensk. Fogl. pl. 41. figs. 3, 4; Gould, B. of Eur. pl. 273; id. B. of G. Brit. iv. pl. 20; Schlegel, Vog. Nederl. pls. 186, 187; Roux, Orn. Prov. pl. 311; Jacquem. Voy. dans l'Inde, pl. viii.

♂ *ad.* pileo albo: capitis lateribus et nuchâ nigris, nuchæ plumis elongatis: gulâ albâ: collo pallidè cinereo vix vinaceo tincto: gutture nigro notato, plumis in gutture imo albis valde elongatis et lanceolatis: corpore suprà cærulescenti-cinereo, scapularibus pallidioribus elongatis: primariis nigris: caudâ cærulescenti-cinereâ: pectore medio et subcaudalibus albis, pectoris et abdominis lateribus nigris, hypochondriis cinereis: rostro, iride et regione oculari nudâ flavis: pedibus saturatè viridi-cinereis.

♀ *ad.* mari similis sed minor, nuchæ plumis brevioribus, scapularibus saturatioribus et plumis elongatis in gutture imo cinereo tinctis.

Adult Male (Leadenhall Market). Crown pure white, this colour gradually narrowing towards the nape to a point; sides and hind portion of the head deep glossy black, the feathers on the nape much elongated, three being five or six inches long; upper throat white; neck pale ashy grey, with the faintest vinous tinge, the fore part of the neck marked with two or three lines of pointed blue-black feathers; on the lower neck is a large bunch of long, pointed, narrow, white feathers, tinged with warm ashy grey at their base; upper parts ashy blue, scapulars paler, and having the webs divided and elongated into narrow strips; primaries deep black; edge of the wing white; tail ashy blue; centre of the breast and under tail-coverts white; sides of the breast and a broad stripe running along each side of the abdomen deep black, flanks ashy grey; thighs pale ashy, with a vinous tinge; bill, bare space round the eye, and iris yellow; legs dark grey, with a greenish tinge, yellowish on the soles and on the upper bare part of the tibia. Total length about 37 inches, culmen 4·8, wing 17·7, tail 7·5, tarsus 5·5, bare portion of tibia 2·8.

Adult Female (Sweden, 12th May). Differs from the male only in being a trifle smaller; the feathers on the nape are less elongated, the three long feathers being wanting, or much shorter; the scapular feathers are also darker grey, and the bunch of feathers on the breast is more tinged with grey.

Young (Leadenhall Market). Crown dark dull ashy, becoming black on the nape; upper parts dull dark ashy, lacking the elongated scapular feathers of the adult; neck darker and duller than in the adult; the elongated nuchal feathers and the bunch of feathers on the lower neck are wanting, and the under-parts are white, tinged with grey, and broadly striped with blackish on the breast and sides; bill yellowish, dark greyish horn towards the tip; legs dull dark grey.

The above specimen is evidently a bird of the year, having its first complete feather plumage. After the first moult (that is, when the bird is two years old) the crown has become lighter, the nuchal feathers are longer, the feathers on the lower neck have become pointed and slightly elongated, and the upper parts show signs of the mature dress, but the black on the sides of the breast and abdomen is not developed. After the second moult (that is, in the third year) the bird attains its complete mature plumage.

In the down plumage the young bird is covered with long, fine, soft down, which is much elongated on the back and head, and is on the upper parts light grey, and on the throat, front of the neck, breast, and abdomen white; the bill is reddish white, iris white, legs reddish grey.

The range of our common Heron is very extensive; for it inhabits Europe as far north as Central Scandinavia, Africa as far south as the Cape of Good Hope, and Asia as far east as Japan, having been met with southward in Java, Australia, and New South Wales; but Naumann is wrong in stating that it inhabits America, as it is there replaced by *Ardea herodias*, Linn.

In Great Britain it is resident, and tolerably common, though far from being so numerous as it used to be formerly when it was strictly preserved. Being, however, shy and wary, it is tolerably well able to take care of itself, and there are few parts of England where, in suitable localities, Herons are not to be seen. Yarrell gives a catalogue of all the heronries known to him; and since then several lists have been made out, the last being one published by Mr. J. E. Harting in 'The Field' of February 17th and March 9th, 1872; and this gentleman states that since then he has received notices of several others. As, however, I am not writing exclusively on British birds, it is not necessary for me to say more than that there are tolerably large heronries still in existence in many parts of England, and I have no doubt that the fullest details will be given by Professor Newton in the edition of Yarrell's 'British Birds' he is now so

carefully editing. Many interesting particulars respecting the heronries now in existence have been sent to me; but my space will not permit of publishing these in detail. It would appear as if in many places the Herons had, chiefly owing to persecution, forsaken their breeding-haunts and taken possession of others; thus, for instance, Mr. F. Nicholson informs me that there are at present five heronries in existence in Cheshire, and four have ceased to exist. The five referred to by Mr. Nicholson are at Aston Hall, near Frodsham; Burton Hall, on the Dee; Eaton Hall, near Chester; Hooton, on the Mersey; and Tabley Park. Of these only one is included amongst the five enumerated by Yarrell as then existing in Cheshire.

Mr. Cecil Smith informs me that he has seen Herons on the Channel Islands, which must have come either from the French coast or perhaps from the heronry on the Dart, in Devonshire; and he adds that in his own county, Somersetshire, the two heronries referred to by Yarrell at Picton and at Brockley woods are still in existence. Mr. Stevenson, in his work on the birds of Norfolk, gives most interesting details respecting the heronries now in existence in Norfolk, to which I may refer those of my readers who desire more detailed information than I am able to give. In Scotland the present species, Mr. Robert Gray writes, "is abundant in all the western counties, and also throughout the Long Island, or Outer Hebrides. It is equally distributed over the inner group of islands, where there are several heronries. On the mainland these interesting nurseries occur at intervals from the north-west of Sutherland to Wigtownshire. In many of the wilder districts, where trees are either of stunted growth, or entirely absent, the sites selected are very different from those one is accustomed to see in cultivated localities. Mr. Colin M'Vean has sent me word that he lately visited one of the largest heronries he ever saw; it was on the Point of Ardnamurchan, where the rocks are tolerably steep and covered with ivy and shrubs, among which the Herons had built their nests."

In Ireland it is, according to Thompson, particularly numerous, owing to the large proportion of suitable country where rivers, lakes, or marshes are scattered about. It has twice been recorded from Greenland; and Professor Reinhardt, referring to these occurrences, writes (Ibis, 1861, p. 9) as follows:—"The common Heron was admitted in the 'Fauna Grœnlandica' upon the authority of the missionary Matthæus Stach, who said that he had seen such a bird on the 27th of August, 1765. Misunderstanding the words of Fabricius, Holböll in his memoir erased the bird (never since observed) from the Greenland avifauna. But in 1856 a young Heron was found dead near Nenortalik, and sent to the Royal Museum; and this occurrence not only gives the species a claim to be enumerated here, but makes it not unlikely that the old missionary may have been right." Mr. Benzon informs me that it has been met with in Iceland, where it is a rare straggler, and its presence is supposed by the natives to forebode a good fish-season. Captain Feilden says that it occasionally straggles to the Færoes, and he saw one when crossing the Skuoe fjord on the 24th May. An old male was shot near Saxen on the 3rd June, 1864; Wolley mentions having seen a single example in June 1849; and Müller records them as not uncommon stragglers. In Scandinavia it is not uncommon in the south, but becomes much rarer towards the northern portions of the country, and has not been observed north of Lofoten, in 68° N. lat. Mr. R. Collett informs me that "it breeds in colonies on the west coast, but not in the interior, as far as Nordland, but is scattered only sparingly here and there, except near the coasts of Stavanger and Bergen Stifts, where considerable numbers breed. In the interior

stragglers only are seen during passage; but on one occasion a pair bred far from the sea, in the Gudbrands dale. A few remain over winter as far north as the Trondhjems fjord."

In Sweden it is merely a summer resident, arriving in March or, should the weather be very mild, even as early as the last days of February, and leaving again in September or October. Nilsson says that it appears on the coast of Bohuslän in the spring and autumn; near Gothenburg it is not very common; and though it breeds in Wermland, in the Gillberga valley it is rare, and is exceedingly rare in Östergöthland. In the south of Sweden, however, it breeds in colonies in several localities. In Finland it appears to be extremely rare. According to Dr. Palmén (Finl. Fogl. ii. p. 298) it is said to have occurred at Glöet, near Helsingfors, about 1820; and Professor W. Nylander believes, from what the peasants say, that it has bred at Taipale, in South-eastern Finland. Mr. Sabanäeff informs me that it is rare in the Government of Jaroslaf, in Russia, but becomes common in the southern portion of the Moscow Government. In the Ural he did not meet with it on the eastern slope above Ekaterinburg; but in the autumn he observed numbers frequenting the lakes in the black-earth plains, and believes that large heronries exist somewhere on the western slope, probably in the Niazepetroffsk or Poleffsk Ural. In the Kaslinsk and Keshtemsk Ural it breeds but rarely. I have no data respecting its occurrence in Poland; but Meyer speaks of it as being not uncommon on the Aa and Düna, in Livonia; and Borggreve says that during the summer it is found commonly in the eastern districts of North Germany, but, so far as he knows, in the western portion it is only met with breeding in colonies in Oldenburg and the Lower Rhine. Stragglers, however, are to be seen in Western Germany not only during winter but also in the summer season. I have seen it on several occasions in the Rhenish Provinces; and Mr. Carl Sachse, of Altenkirchen, informs me that it is found there, but is not common; for only a few are seen, but are met with at all seasons of the year. There are two small heronries about sixteen or twenty English miles from there, whence those that are seen near Altenkirchen doubtless come. In Denmark the Heron is said by Mr. A. Benzon to breed in tolerably large numbers, arriving in March, or, in late seasons, in April, and leaving in September or October. It breeds, he says, in colonies near either inland waters or in the vicinity of the sea, placing its nest on large beeches or larches, usually on the former, selecting the largest trees it can find, and placing its nest on the topmost boughs. In Holland it is common; and there are, Mr. Labouchere informs me, still some very large heronries in that country, chiefly in Guelderland. One large heronry is near the railroad between Amsterdam and Utrecht. It occurs in Belgium as in Holland; and, according to Messrs. Degland and Gerbe, it is a summer resident in the north of France, but found throughout the year in the vast marshes of Languedoc, Roussillon, and on the banks of the Rhône near its mouth. It is included by Professor Barboza du Bocage in his list of the birds of Portugal as common; and it is said to be resident in Spain, where, however, Dr. A. E. Brehm says, it did not appear to him to be so numerous as it is in Germany. Colonel Irby writes (Orn. of Str. of Gibr. p. 184) that it "visits the neighbourhood of Gibraltar in great numbers during the winter season; and they particularly frequent the district between the rivers near Palmones. Mostly departing by March, some few pairs are resident about Casa Vieja."

In Italy it is said by Salvadori to breed in the northern and central districts, where it seldom remains during the winter, but is common in the south, in Sardinia, and in Sicily during

the cold season; and Mr. A. B. Brooke writes (Ibis, 1873, p. 340) that he found it very common during winter amongst the large shallow lagoons, which are full of fish. Mr. C. A. Wright, who has obtained it at Malta, says that it is not uncommon in the spring and autumn, and during stormy weather it is occasionally seen in the winter. Lord Lilford found it common in Corfu and all parts of the mainland in winter, and he observed it in August in Albania and Montenegro. Lindermayer writes that it arrives in Greece earlier than any other of its allies, and usually about a fortnight earlier than the Purple Heron. It remains only a short time; and all but a few pass further north to breed, these few remaining in the north of Greece during the breeding-season, and returning to the coast early in August. In the autumn all disappear, except a few stragglers which winter in the south of Greece. In Southern Germany it is resident, and breeds here and there in suitable localities. I observed it in all parts of the Danube which I visited, most frequently in the marshy districts of Hungary and in Bulgaria.

In Southern Russia it is also common; and Mr. Goebel says (J. f. O. 1871, p. 142) that in the autumn he has seen as many as fifty together in the Uman district: but it is not so numerous there during the nesting-season; for he says that there is only one heronry in that neighbourhood, consisting of ten nests built on almost inaccessible trees.

It doubtless occurs in Asia Minor; and Canon Tristram met with it in Palestine. It is to be met with in Africa, very widely distributed both during the winter and in the breeding-season. Captain Shelley met with it throughout Egypt and Nubia; and it is stated to occur in Abyssinia. Von Heuglin says that it is not common on the coasts of the Red Sea. On the west side of the African continent it is said by Canon Tristram to occur in Algeria, where, he writes (Ibis, 1860, p. 77), it is "occasionally to be seen in the ditches and salt marshes of the oases in winter." Mr. C. F. Tyrwhitt-Drake met with it in Morocco; and Colonel Irby states (*l. c.*) that, according to Favier, it is "both resident and migratory in the vicinity of Tangier. Those which migrate pass over to Europe during February and March, returning in November and December, being at all seasons plentiful." It has been met with on the Gold coast, Gaboon, Gambia, and in Angola; and Andersson writes (B. of Damara L. p. 284), in Damara Land "this species is rather common on and near the sea-shore, from the mouth of the Orange River to Walwich Bay, wherever suitable localities occur; but I have seldom seen it inland, except in Ondonga, where it makes its appearance in December; but the natives say that it does not breed there, and I think they are right." In the islands off the African coast it occurs, but appears to be rather rare than otherwise. Dr. A. Dohrn speaks of it (J. f. O. 1871, p. 8) as being only a straggler during passage on the Cape-Verd Islands. He saw a specimen which was killed at San Nicolau. Webb and Berthelot record it as accidental during passage in the Canaries; but Dr. C. Bolle says (J. f. O. 1855, p. 176) that it is not rare in Teneriffe in winter, and he has frequently seen specimens carried dead through the streets of St. Cruz. He was assured that no Heron bred there; but Mr. F. DuCane Godman writes (Ibis, 1872, p. 221) that he "saw some few pairs about the coast of Teneriffe in the middle of May, and was told that they breed on the detached rocks near the coast, which is very probable, as they certainly do so in St. Michael's. It is said to be occasional only in Madeira." In the Azores, Mr. Godman writes (Nat. Hist. Az. p. 33), "it is the only resident species of Heron. A few pairs are always to be met with about the lakes in St. Michael's, and occasionally on the coasts of the other islands; but the sea is in most

places too deep for them to fish from the shore. I shot a single specimen in St. Michael's, at the Sete Cidades, and saw the remains of an immature bird that had been killed some time previously, which leads me to believe that the species occasionally breeds here, though I could obtain no information as to the fact."

To return, however, to the mainland of Africa, I find it recorded by Mr. Layard (B. of S. Afr. p. 306) as "very abundant throughout South Africa in all suitable localities, feeding upon fish and frogs and an occasional snake. I am told," he says, "they breed on the Cape flats, placing their nests in company on tufts of grass and rushes surrounded with water." Mr. Ayres met with it in Natal; and it has been recorded from Mozambique, Zanzibar, the Comoro Islands, Madagascar, and Mauritius.

To the eastward the common Heron is met with as far as Japan. Mr. Blanford informs me that he found it not uncommon in Persia in suitable localities; and in India, according to Dr. Jerdon (B. of India, ii. p. 752), it is "of general occurrence throughout the country, frequenting rivers and the larger tanks. It breeds on high trees, several together, but not apparently in such numerous societies as it sometimes does in Europe; it feeds chiefly on fish. It is in India, as in Europe, a favourite quarry for the Bhyri."

Severtzoff states (Turk. Jevot. p. 69) that it breeds throughout Turkestan to an altitude of about 3000 to 4000 feet above the sea-level; and it has been recorded from Siberia by Radde and Von Schrenck. The former says that he only once saw it at Lake Baikal, but that it was common on the elevated plateaux of Dauria, and he found them breeding on the ground on the Aral Islands, which are treeless. Von Schrenck writes that it is generally distributed throughout the country skirting the Amoor, but is most numerous in the densely wooded districts on the Southern Amoor. Père David speaks of it as being common in North China, where it breeds; Mr. Swinhoe states that it occurs throughout China, Hainan, and Formosa; and Temminck and Schlegel record it from Japan.

To the southward it is said to occur as far as Australia; for the Australian species is said not to differ specifically from our bird. Mr. Holdsworth speaks of it as being by no means uncommon in Ceylon. According to Messrs. Finsch and Hartlaub it has been obtained in Java; and Mr. Gould states (Handb. B. Austr. ii. p. 295) that he saw it on a journey into the interior of South Australia in 1839, and received a skin direct from New South Wales.

More shy and wary than almost any of our native birds, the Heron is not easy to watch within any thing like a reasonable distance. Having learnt to look on man with distrust, the result probably of bitter experience, it is most careful not to allow him to approach, and usually seeks safety in flight long before the intruder is within gunshot range. So soon as it catches sight of any one approaching it stands erect, watching intently until the object of its suspicion shall have approached too near, when it at once rises on the wing and flies heavily away. When undisturbed and on the look-out for its finny prey, it stands motionless, its body held very erect, almost perpendicular, and its neck doubled up, the bill pointing downwards, and only its small restless eye is in motion, watching carefully for the approach of some incautious fish, at which its bill is darted with lightning speed, and seldom misses its mark. When standing thus the Heron is any thing but a graceful bird; for the body is held low and seems heavy, and altogether, the neck being drawn in, it has a clumsy appearance; but directly it sees any thing which appears

to indicate the approach of danger it erects the body, and raising the neck into a more graceful S-shape, takes two or three slow steps to view the suspicious object; but so soon as its fears are allayed it gradually relapses into its heavy, clumsy attitude, in which it will frequently stand in shallow water motionless for a long time, waiting for some fish to approach. When walking it takes leisurely steps, but is not graceful. Sometimes it will steal silently about in search of prey; and then the body is held almost horizontal, the neck being held forward in an undulating position, and the beak kept low in readiness to strike its prey. Fish, however, are its chief food; and when these are to be had in abundance it scarcely feeds on any thing else; but according to circumstances it varies its bill of fare by catching water-insects, water-rats, mice, or frogs, but seems to care least for the last. Young birds, when they come in its way, are not disdained; and it sometimes feeds on worms. It is a greedy feeder, and is said to consume a large quantity of food per diem. During the breeding-season, when the young are hatched, it must do considerable damage in places where there are fish-preserves; and it will then extend its rambles in search of food to a very considerable distance from the place where its young are. It chiefly frequents freshwater streams which are shallow, and where the water is running, and wades in almost up to its knees in search of its prey. It flight is strong and powerful; and though when on the wing it appears at the first glance to be moving slowly, such is not the case; for its flight is tolerably swift. When it rises it flaps its large wings quickly, and mounts on the wing by making one or two powerful jumps; but soon settles down into its regular, somewhat slow and measured flaps, the neck being doubled and drawn in, and the legs extended behind. Its note is a harsh, deep call, which in the distance somewhat resembles the call of the Wild Goose, and it is generally uttered when the bird is on the wing. When winged and in mortal fear it utters a very harsh and wild cry, and lunges out viciously with its sharp pointed bill, it being then dangerous to approach, for it almost always directs its attack at the face of its enemy.

It breeds usually in tolerably large colonies or heronries, many of which, containing a large number of nests, used formerly to be scattered throughout England; but now they have greatly diminished both in number and size. Formerly the Heron was strictly preserved for the purposes of falconry, and was looked on as royal game; but since falconry has become obsolete it is no longer under any protection, and has consequently become much less numerous. The nest is usually placed on a high tree; but sometimes it breeds on the rocks, and even on the ground, should there be no trees in the neighbourhood. Usually the loftiest and most inaccessible trees are selected, the nest being placed on some of the smaller branches, and constructed of small branches, lined with finer branches or twigs and grass, wool, hair, &c. The nest is flat and somewhat carelessly constructed, the central portion forming a sort of cup-shaped depression, in which the eggs are deposited. These latter are usually three or four in number, but occasionally five, or even six; for Mr. Collett informs me that in a heronry close to the town of Stavanger, in Norway, six eggs were found in a nest which was examined in May 1868 by Mr. Landmark. It not unfrequently nests in the same wood as the Cormorant; and the latter will, Naumann says, often try to take possession of the Herons' nests, which is resisted by the Herons; but, he adds, when the Cormorants have effected an entrance into the herony, the Herons do not return to breed there again the next year, but select another locality, leaving the

Cormorants in undisturbed possession. Mr. Benzon informs me that in Denmark it has been found in some localities that the trees have been seriously injured by the excrements of both the Herons and the Cormorants, and consequently the owners of the woods where they have taken up their abode for the purpose of nidification do all they can to drive them away; but, he adds, they usually return again, and it takes two or three years to get quite rid of them. The Heron rarely breeds except in company; but now and then a solitary nest is to be found. Mr. Carl Sachse informs me that he found a pair breeding quite alone, about six miles from Altenkirchen, last year. The nest was placed in a lofty oak close to the river, and on the 25th April contained five strongly incubated eggs, which he took. He tells me that he has often known the Raven to rob the nests of the Heron, and when a lad he frequently procured eggs by dispossessing the Ravens of their ill-gotten booty. "At Dolle, near Magdeburg," he writes, "there was a large heronry in a wood belonging to the Emperor of Germany, situated about two [German] miles from the Elbe. When we visited this heronry, and the Herons flew away, the Ravens immediately pounced down and commenced to rob the nests, taking possession of the eggs, and flying down to the ground with them to devour the contents; but by running quickly towards the Ravens they would take flight, leaving their booty for us to take possession of."

With us in England the heronries are now seldom very large; and one of the most numerously populated appears to be that at Costessey, referred to by Mr. Stevenson, which in 1866 contained about sixty nests. In France, however, according to Messrs. Degland and Gerbe, at least one very large heronry still exists at Champignal, on a property belonging to the Sainte-Suzanne family. According to M. Lescuyer de Saint-Dizier this heronry contained in 1864 one hundred and seventy-two nests within the area of one hectare, the total number of Herons in the colony, both old and young, being estimated at about a thousand. He climbed into one tree which contained eight nests, in which were altogether twenty-eight young; thus the population of that tree, including the parents, was forty-four Herons.

I am indebted to Mr. J. J. Dalgleish for the following information respecting the heronry at Ardnamurchan above referred to:—"This heronry is situated on the face of a cliff about four miles south of the well-known and stormy Point of Ardnamurchan. The nests are placed about 80 feet from the base of the cliff, which at this point is covered with thick ivy, in the interstices of which the nests are in many instances placed. The Herons have lately changed their ground to a point a little distant from the original one, where they are secure from the predatory visits of boys, who used to reach some of the lower nests by climbing. Their new place is too high for this. The eggs are generally laid here early in May, while the young birds are still to be seen at the nests as late as the end of July and even in August. There are two other localities in Ardnamurchan where single pairs breed on rocks; and there are also heronries at Kinlochmoidart and in Lochshiell, Invernesshire, and at Ards in the Island of Mull, all in the neighbourhood of Ardnamurchan."

The eggs of the present species are uniform pale blue in colour, sometimes with small white chalky spots here and there, and, if scratched with the nail, the shell is found to have a peculiar chalky texture. In size eggs in my collection average $2\frac{1}{2}$ by $1\frac{27}{40}$ inch, and are oval in shape, tapering somewhat at each end.

As the male or male and young have generally been figured, I have deemed it best to figure

a very old female from Sweden, which, it will be seen, differs from the old male only in having the three long nuchal feathers shorter, the scapulars greyer, and the bunch of feathers on the lower breast tinged with grey. In the background to the left is a young bird in first plumage.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Leadenhall market. *b*, *juv.* Leadenhall market, September (*H. E. D.*). *c*, ♀ *ad.* Boringe, Skåne, Sweden, May 12th, 1870. *d.* Nice (*J. H. Gurney, jun.*) *e.* Deccan, India, 1868 (*H. W. Feilden*). *f.* Amoy, China, December 1866.

E Mus. J. H. Gurney, jun.

a, ♀. Darlington, March 17th, 1868. *b.* Hailsham, Sussex. *c*, ♂. Lincolnshire, March 19th, 1867.



PURPLE HERON.
ARDEA PURPUREA

ARDEA PURPUREA.

(PURPLE HERON.)

Ardea purpurascens, Briss. Orn. v. p. 420 (1760).
Ardea cristata purpurascens, Briss. tom. cit. p. 424, pl. 36. fig. 2 (1760).
Ardea botaurus major, Briss. tom. cit. p. 455 (1760).
?*Ardea cancrophagus castaneus*, Briss. tom. cit. p. 468 (1760).
Ardea purpurea, Linn. Syst. Nat. i. p. 236 (1766).
Ardea rufa, Scop. Ann. I. Hist. Nat. p. 87. no. 119 (1769).
Ardea variegata, Scop. op. cit. p. 88. no. 120 (1769).
Ardea caspia, S. G. Gmel. Reise Russl. ii. p. 193, pl. 24 (1774).
Héron pourpré, Buff. Hist. Nat. Ois. vii. p. 369 (1780).
Ardea botaurus, Gmel. Syst. Nat. i. p. 636 (1788).
Ardea purpurata, Gmel. tom. cit. p. 641 (1788).
? *Ardea badia*, Gmel. tom. cit. p. 644 (1788).
Ardea monticola, Lapeyrouse, Tab. des Ois., fide Wagl. Syst. Av. *Ard.* no. 6 (1827).
Ardea purpurea, var. *manillensis*, Meyen, Nov. Act. Ac. C. L. C. Nat. Cur. xvi. suppl. prim. p. 102 (1834).
Ardea purpurascens, C. L. Brehm, Vogelfang, p. 293 (1855).
Ardea pharaonica, Bp. Consp. Gen. Av. ii. p. 113 (1857).

Héron pourpré, French; *Garça*, Portuguese; *Garza*, *Garza moruna*, Spanish; *Airone rosso*, Italian; *Russet culur-canella*, Maltese; *Siad el mraj*, Moorish; *Purpurreiher*, *Bergreiher*, German; *purper Reiger*, *roode Reiger*, Dutch; *Purpurhäger*, Swedish.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 788; Werner, Atlas, *Coureurs*, pl. 24; Fritsch, Vög. Eur. taf. 43. figs. 1, 6; Naumann, Vög. Deutschl. taf. 221; Sundevall, Svensk. Fogl. pl. 77. fig. 1; Gould, B. of Eur. pl. 274; id. B. of G. Brit. iv. pl. 21.

Ad. pileo et nuchâ nigris, plumis elongatis, nonnullis valdè elongatis strictis, pendulis: mento albo: collo rufo, tæniâ posticâ alterâque utrinque laterali nigris: colli infimi plumis elongatis, albis, medio nigris: corpore suprà saturatè cinereo, dorso vix virescenti-metallico nitente, scapularibus elongatis dilutè rufescentibus et cinereis: remigibus et rectricibus nigricantibus, vix plumbeo tinctis: pectore intensè purpurascenti-castaneo, medio nigro notato: abdomine centrali nigro: hypochondriis cinereis, subalaribus pallidè castaneis: tibiis rufescenti-cervinis: rostro flavo, suprà corneo: iride flavâ: pedibus viridi-cinereis.

Juv. pileo et nuchâ saturatè rufescentibus, fronte nigro immixto: mento albo: collo rufescente, in parte frontali nigro striato: corpore suprà cinerascenti-fusco, plumis omnibus ochrascente ferrugineo marginatis: remigibus et rectricibus ut in adulto coloratis, sed secundariis intimis ferrugineo marginatis:

corpore subtùs sordidè et pallidè ochraceo: plumis elongatis in gutture imo indistinctè fumoso notatis: hypochondriis brunnescenti-cinereis: pedibus pallidè viridi-flavis: rostro flavido brunneo immixto: iride flavâ.

Adult (Seville). Crown and nape black with a blue-grey tinge, nuchal feathers much elongated, forming a crest when elevated, two much longer than the rest, measuring fully 5 inches in length; chin and upper throat white, gradually becoming rusty red on the neck; sides of the head pale rusty; a black line passes down the hind neck, and one on each side of the neck from the gape; lower neck in front covered with a large bunch of elongated pointed feathers, nearly pure white in colour, and marked with long black stripes, the front of the neck above this bunch being also striped; lower part of the hind neck, back, and rump deep ashy blue or plumbeous, with a slight metallic greenish tinge on the back when held in a strong light; quills and tail deep ashy plumbeous, the inner webs of the primaries blackish; wing-coverts like the back, but duller, and with a brownish tinge; many of the dorsal feathers and the scapulars elongated and filamentous, the former ashy blue, the latter ashy blue intermixed with pale rusty red; breast rich maroon-red, marked with black in the centre; flanks ashy grey, thighs reddish buff; under wing-coverts pale chestnut, centre of abdomen black; under tail-coverts blackish, intermixed with white; bill yellow, darker on the upper ridge and at the base; bare skin round the eye greenish yellow; iris rich yellow; legs dark greenish grey, reddish at the tibial joint, claws blackish horn. Total length about 30–32 inches, culmen 5·1, gape 6·3, wing 14·0, tail 5·0, tarsus 5·0, middle toe 5·0, middle claw 1·15.

Young of the year (Butrinto, Albania, October). Crown and nape dark rusty reddish, with a few black markings on the forehead; chin white; rest of the neck and throat pale yellowish rusty, slightly striped with black on the fore neck; upper parts generally greyish brown, all the feathers with very broad yellowish rusty margins; quills and tail blackish with a grey tinge, the inner secondaries margined with rusty; underparts dull ochreous white, the somewhat elongated feathers on the breast with washed-out brownish stripes; flanks brownish ashy grey; legs pale yellowish green; bill yellowish, becoming brownish at the tip and along the edge of the culmen; iris yellow.

Obs. The full plumage is only assumed after the second moult, when the bird is three years old. The above-described bird from Butrinto is a young bird of the year; but a second, older specimen, evidently a bird in its second year, also from Albania, has the crown black; the elongated nuchal feathers have already appeared, but are not so long as in the adult; the upper parts are much darker, and the margins have nearly disappeared; the long narrow feathers on the back are appearing, but are dark brown intermixed with rusty; the neck is more striped with black, the underparts darker, and the bunch of long pointed feathers on the breast is also to some extent developed.

Nestling (*fide* H. Saunders, Ibis, 1871, p. 390). Skin and feet yellowish green, yellow on the abdomen; upper mandible greenish horn-colour, lower mandible yellow; iris pale straw-yellow; feathers reddish brown; hairy crest; shafts of feathers lead-blue, all edged with white down, whitest on the abdomen; claws horn-white.

In Europe proper the present species inhabits the southern and central districts, being somewhat rare in the latter. It is found in Africa as far south as the Cape of Good Hope, and in Asia as far east as China and as far south as the Philippines.

In Great Britain it is a tolerably rare straggler, but has been met with in most of the southern counties of England. Yarrell records instances of its occurrence in Cornwall and

Devonshire; but Mr. Gatcombe informs me it is very rarely found in the latter county, and he has only seen one specimen killed there, a young bird, which he found hanging up in a poulterer's shop in Stonehouse, and ascertained that it had been killed near that town. Mr. J. C. Mansel-Pleydell states (Orn. and Conc. Dorset. p. 28) that Mr. Radclyffe shot one at Hyde, in Dorset, some years ago; and Mr. Henning possessed a specimen, purchased in 1848, which had been shot near Dorchester. Yarrell refers to instances of specimens having been obtained in Suffolk; and Mr. Stevenson, who gives full details respecting the earlier records of its occurrence in Norfolk, says that he only knows of two examples obtained there of late years, one of which was shot on Hoveton broad on the 1st July, 1862, by Lord Lilford, and the second was purchased in the Norwich fish-market by Mr. S. Bligh on the 28th October, 1865, and is now in Mr. Stevenson's collection. Mr. Cordeaux also (B. of Humber Distr. p. 103) cites instances of its occurrence in East Yorkshire and Lincolnshire. It appears to have only been met with in Scotland on two occasions. Mr. Robert Gray writes (B. of W. of Scotl. p. 276) as follows:—"A specimen of the Purple Heron, killed in Caithness, is mentioned by the late Mr. Wilson as being in the collection of Mr. E. S. Sinclair, surgeon, Wick. This occurrence had previously been published by the Rev. Charles Thomson in his statistical account of that parish, dated March 1841. Another example of this rare bird was shot in the parish of Monquhitter, Aberdeenshire, in March 1847, as recorded in Macgillivray's British birds, on the authority of the Rev. James Smith, who furnished Dr. Macgillivray with the full particulars of its capture." It is said to have only once been obtained in Ireland, and is not found in Greenland, Iceland, or the Færoes, nor has it, so far as I can ascertain, ever been seen or obtained in Norway; and, according to Nilsson, it has only once occurred in Sweden, in Southern Skåne, where one was shot by a peasant lad on the 18th April, 1853, at Östra Torp. In Finland it does not occur; nor has it been met with by Sabanäeff in Central Russia, or by Meves and other travellers in the northern Governments of that empire. In Northern and Central Germany it appears to be a rare bird, but breeds in some parts of Central Germany. Gloger says that it breeds regularly in Central and Lower Silesia; and Mr. A. von Homeyer found it nesting on an island in the Rhine to the south-west of Darmstadt. It does not appear to visit Denmark even as a straggler, but is found in Holland, where it is said to breed; but Mr. Labouchere informs me it is rare, and he only once observed it not far from Amsterdam.

Baron de Selys Longchamps says it is of rare and accidental occurrence on passage in the centre of Belgium and on the Moselle, but is more abundant in the great marsh near Venlo, towards the Dutch frontier. It is met with throughout France. Messrs. Degland and Gerbe state that it breeds in tolerable abundance in the south of France, and sometimes in Champagne, but is a mere visitor on passage in most of the west and northern provinces. In the autumn of 1845 a large number passed by Lille, at which season only immature birds are observed, whilst in spring adults are also obtained. Jaubert and Barthélemy-Lapommeraye doubt if it any longer breeds in the marshes of the Bouches du Rhône, as it formerly did. It is included by Professor Barboza du Bocage in his list of the birds of Portugal as being common at Alemtejo, and is also a common bird in Spain during the nesting-season, but does not winter there. Mr. Howard Saunders found it breeding near Seville and at the Albufera of Valencia; and Colonel Irby writes (Orn. Str. Gibr. p. 182) as follows:—"The Purple Heron in Andalucia only remains for

the nesting-season; and I never knew an instance of its occurrence in winter. My earliest dates of arrival observed near Gibraltar were the 4th April 1870, 7th April 1871, 25th March 1872, 7th March 1874. They are extremely abundant, and generally easy to get a shot at, being seldom found in the open, but almost always among rushes or swampy jungle, and are very rarely seen to perch on trees. There is, about five miles from Gibraltar, beyond the first river (Guadarranque), on the right of the road to Los Barrios, a leech-preserve, grandly called the 'laguna,' perhaps two acres in extent. This swamp is a dense mass of tall rushes springing up through masses of dead ones, the growth of years past, all so matted and tangled together as to make it very difficult to pass through them, more especially as the water is in places up to one's armpits. This delightful spot is a very favourite nesting-place of the Purple Heron; and there generally used to be three pairs nesting there, also two nests of Marsh-Harriers."

Passing eastward I find it recorded from Savoy as occurring principally on passage in the spring, when it is numerous. It is tolerably common in Italy, where a good number breed, and still more pass on migration; but it does not remain throughout the winter, as it appears to do in Sicily, where it also breeds and is generally abundant. In Sardinia it seems to be rather scarce; and Mr. A. B. Brooke states (Ibis, 1873, p. 340) that it only occurs there during passage, none remaining to breed. In Malta, Mr. C. A. Wright writes (Ibis, 1864, p. 143), "large flocks may be seen passing in spring and autumn. Single birds are also often seen and shot. They alight on the carob-trees and along the sea-shore." Lord Lilford met with it in the Ionian Islands, and believes that it breeds in Epirus, as he frequently saw young birds in July and August; and Dr. Krüper says that it appears in Greece late in March. He saw the first in 1873 on the 28th March, and in 1874 on the 26th April in Attica, and states that it is said to breed in the large swamps. In Southern Germany it is a common bird in many localities. Dr. A. Fritsch says (J. f. O. 1871, p. 390) that it visits Bohemia almost every year, and appears to breed there. In 1863 about a hundred individuals appeared in the vicinity of Frauenburg, and nested on the Gross Tissy Lake. On the Danube it is a common bird; I frequently saw it when travelling in the countries bordering that river; and Messrs. Elwes and Buckley say that it is common in Bulgaria, especially about the lakes and backwaters of the Danube. In Southern Russia it is stated by Professor von Nordmann to be even more numerous than the common Heron. It is a summer resident there, leaving about the middle of September; and in the Uman district it is, Herr Goebel says, very common during summer, but as it nests on the inaccessible floating islands he was never able to get its eggs. I have no details respecting its occurrence in Asia Minor, where it is doubtless common; and in Palestine it is, Canon Tristram states, scattered throughout the whole country in small numbers at all times of the year. Throughout Africa, as far south as the Cape of Good Hope, the present species is found in suitable localities, and breeds in the Transvaal. Captain Shelley writes (B. of Egypt, p. 266) that it is "resident and very plentiful in some parts of Lower Egypt and the Fayoom. I met with great numbers on the desert side of Birket el Korn, among the thick banks of sedge that grow in the lake. They are not nearly so shy as the common Heron, and always frequent the dense reeds; on being disturbed they would rarely go straight away, but generally flew round over the same spot several times, so that they were easily shot." Von Heuglin writes that it was met with by him throughout the whole of that portion of Africa he visited. He believes

that it probably nests in the Nile delta, and he observed it throughout the year on the coasts of the Red Sea. In July and August he saw large flocks at Massowa; in the late autumn he observed it on the Somali coast, and in the winter and spring in Abyssinia, where it is found up to an altitude of from 6000 to 9000 feet. In autumn and winter it is met with, usually in immature dress, on the Blue and White Nile up to the month of March. In North-west Africa it is also a common bird. Loche states that it is resident in Algeria, and is found on almost all the lakes, its numbers being much increased during migration; and in Morocco, according to Favier (Irby, *l. c.*), it is "a summer visitant, and nearly as numerous as the common Heron. They pass north in April, returning in September, many remaining in the country to breed." In West Africa it is recorded from Casamanse and Bissao by Verreaux; and it also appears to occur in Damara Land; for Mr. Andersson writes (B. of Damara L. p. 286) as follows:—"I have not unfrequently shot this bird on the rivers Okavango and Teonghe, and at Lake Ngami; and I believe it also visits Damara Land during the rainy season; but the specimens which I obtained in the latter country were not preserved, and I am therefore unable positively to identify them." Mr. E. L. Layard records it as being abundant throughout the Cape colony, but he never found it breeding there. It breeds in the Transvaal, where it is common in the open country; and Mr. Chapman obtained specimens on the Zambesi, where, Dr. Kirk states (Ibis, 1864, p. 332), it is common in all marshy places and near rivers. Messrs. Roche and E. Newton met with it on Madagascar; and I must not omit to name that it is recorded by Mr. Godman as being found in the central group of the Azores and at Madeira.

In Asia it has been met with as far east as China; and, according to Pallas, it occurs as far north in Western Siberia as 55° N. lat. Messrs. Blanford and St. John met with it in suitable localities throughout Persia. Severtzoff states that it breeds in North-western Turkestan; and, according to Dr. Jerdon, it is "found throughout India and Ceylon, extending into Burmah and Malayana." Mr. Holdsworth states that it is more common in Ceylon than the common Heron, it is very numerous in the south, and breeds near Amblangodde Lake, a few miles from Galle. Lord Walden records it from the Andaman Islands; and Meyen, who obtained it at Manilla, separated the bird obtained there from our European Purple Heron, on account of its larger size. Professor Schlegel states that in the collection at Leyden there are examples from Java and Borneo; and Mr. Swinhoe once obtained it from Hankow, in Central China. It is not included in the 'Fauna Japonica;' but Messrs. Finsch and Hartlaub state (Vög. Ost-Afr. p. 676) that it occurs in Japan.

Though it resembles the common Heron in its general outward appearance, yet in habits the present bird bears much closer affinity to the Bittern than to that species. Unlike the Heron, which frequents large rivers and open places where it can have a clear and uninterrupted view for some distance and can see an intruder approach from afar, the Purple Heron, like the skulking Bittern, affects localities where the water is still, not flowing, and where the banks and shallow parts are covered with a tolerably dense growth of flags and reeds, in which, by concealing itself, it trusts to escape the notice of its enemies. It does not, however, inhabit the dense, almost inaccessible reed-forests where the Bittern feels itself so much at home, but is usually met with in places where there are open places between the water-plants, where the water is not too deep, and in marshy places where there is a mixed growth of willow bushes and high grass

or reeds. I never recollect to have seen one standing boldly out on the edge of the water as the common Heron so frequently does, but have flushed them when making my way quietly through the reeds and herbage that grows so luxuriously in the swampy and marshy places. It is a lighter, smaller, and rather more graceful bird than the common Heron; but in its usual mode of progression, both on foot and on the wing, it much resembles that species. It is most active during the early morning and in the evening, remaining quiet during the middle of the day, but altogether it is much less active and more sluggish than *Ardea cinerea*. When resting and dozing during the day-time it sits in a most peculiar position, in which it may be compared to an old pointed brown post sticking in the ground. It sits mainly on its hinder quarters, resting on those and the hinder part of the tarsus (not on the foot); and the body and neck are stuck in an almost upright position. Naumann (taf. 221. fig. 2) gives an excellent illustration of the bird sitting in this awkward-looking posture, as it is said almost always to do when it is at rest. It is a bird much more seldom seen, even where it is numerous, than the common Heron, chiefly on account of its secretive habits; but it gets attached to a place which it has once got to like, and will remain there as long as it is left in peace. It walks with deliberate, slow steps; and its long toes enable it to walk with comparative ease on the floating masses of aquatic herbage which are so often seen in the portions of the marshes which are covered with water. It feeds on small fish of various kinds, in search of which it does not usually select the clear water, but fishes in even the smaller puddles in marshy places which afford it plenty of cover. It is stated to devour large numbers of young green frogs (*Rana esculenta*), which are extremely numerous in some places; and Naumann names that they will occasionally eat mice, and likewise feed on large and small water-insects and their larvæ. It never seeks after food in open places, but always where the cover of reeds or flags is tolerably dense.

Its voice is not unlike that of the common Heron, but is much lower in tone; and Naumann very aptly compares it, when heard at some distance, to the note or cry of the Wild Duck (*Anas boschas*). Its voice, however, is heard but comparatively seldom, and then when it is on the wing.

Unlike the common Heron it seldom perches on a tree, and then never on the top in open view, but in the lower branches, where it is, to some extent, hidden by the foliage. Nor does it select a tree for the purpose of nidification, but it places its nest, like that of a Bittern, on the ground in marshy, usually treeless, localities, or very frequently on the floating islands of tangled aquatic herbage; or else a platform is formed, on which the nest is placed, by treading down the rushes and flags until they form a support. Colonel Irby, who found it breeding near Gibraltar, says that "the nests vary much in size, and consisting merely of a few dried rushes collected together so as to form a sort of platform just clear of the water, are generally twenty or thirty yards apart. These Herons commence to lay about the 13th of April, as a rule depositing three eggs (rarely four), as the following few instances of nests taken and seen will show:—on the 21st of April two nests—one with four, one with three eggs, all fresh; on the 6th of May two nests—one with three fresh eggs, the other with three eggs hard sat on." Mr. Ayres, also describing its nests found by him in South Africa, writes (Ibis, 1869, p. 302) as follows:—"This Heron chooses for its breeding-place a secluded reedy swamp. The nest is placed some few feet above the water (which is frequently out of one's depth), on reeds bent down by the bird so as to

meet from all directions, and thus form a sufficient support for the nest, which is a very rough structure, composed of dead sticks and pieces of reeds; it is two or three feet in diameter, with a very slight concavity. These Herons lay three or four eggs; and frequently five or six pairs breed in company, placing their nests within a few yards of each other." I possess eggs of the Purple Heron obtained in Hungary by Herr Zelebor, which closely resemble those of *Ardea cinerea*, except in size, being smaller, measuring only from $2\frac{4}{40}$ by $1\frac{23}{40}$ inch to $2\frac{10}{40}$ by $1\frac{27}{40}$ inch.

The specimens figured are an adult male and young bird in its first autumn plumage, these being those above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Seville (*Llanos*). *b, ad.* Butrinto, Albania, 1869. *c, jun.* Albania. *d, juv.* Butrinto, October 1871 (*H. Barclay*).



ARDEA ATRICOLLIS

XVII

ARDEA MELANOCEPHALA.

(BLACK-NECKED HERON.)

Ardea melanocephala, Childr. & Vig. App. to Denh. & Clappert. Trav. p. 201 (1826).
Ardea atricollis, Wagl. Syst. Av. *Ardea*, sp. 4 (1827).

Ad. pileo cristato, plumis quatuor pendulis ornato, genis et collo postico saturate ardesiacis: dorso plumbescenti-cinereo viridi lavato: plumis scapularibus elongatis pendulis lanceolatis cinereis, exterioribus lactescenti-albis: dorso postico clare cinereo: tectricibus alarum plumbeis viridi lavatis, majoribus cinereis, plus minusve canescentibus: remigibus et rectricibus saturate plumbeis: gutture toto albo: collo inferiore ardesiaco, nigro vario: jugulo albo lineis lanceolatis ardesiacis longitudinaliter striato: corpore reliquo subtus pulchre cinereo: subalaribus et pennis axillaribus pure albis: pedibus nigris: maxilla nigra, mandibula flavicante: iride flava.

Adult. Head, which is ornamented with four pendent plumes, ear-coverts, and back of the neck blackish grey; upper part of the back dull leaden grey, with a slight greenish lustre; lower part of the back clear grey; scapulars for the most part leaden grey, tinged slightly with green like the back, all the feathers elongated and lanceolate in form, some of the central and outer feathers clear grey, verging into cream-colour; wing-coverts dark grey with a slight green lustre, the outermost clear grey: quills dark leaden grey, some of the primaries tipped with brown, the secondaries somewhat paler grey, also tinged with greenish; tail dark grey, some of the outer feathers tipped with brownish; chin and throat pure white; upper portion of the neck blackish grey like the head, a few of the feathers being centred with white; lower down the neck is white, the feathers being edged with dark grey, all the plumes elongated and hair-like; under surface of the body clear grey, somewhat inclining to white; under tail-coverts dark grey, streaked down the centre with white; under wing-coverts and axillary plumes pure white; legs and feet black; upper mandible black, under mandible greenish yellow, as also the skin round the eye; eye light yellow (*Ayres*). Total length 31·5 inches, culm 3·0, wing 15·8, tail 6·2, tarsus 4·4.

Young, before the first moult. Upper part of the head, neck, scapulars, and upper wing-coverts of an ashy grey, tinged with brown and washed with green between the shoulders, and more or less washed with rufous on the other parts; sides of the head grey shaded with blackish, and having a black spot below the eye; throat and sides of the neck white washed with pale rufous, relieved in the centre of the neck by narrow longitudinal stripes of yellow; lower part of the neck and breast of a pale grey, washed with very light rust-colour; rest of the underparts of the body of a yellowish white; outer border of the wing and axillary plumes white; quills bluish black, less intense than in the adult, with the secondaries externally bordered with grey; tail-feathers bluish black; beak rather more yellow than in the adult; feet tinged with reddish; feathers of the crest and breast scarcely so long as in the adults.

The Black-necked Heron is only a straggler to Europe; and the following account of its occurrence is taken from the work of MM. Degland and Gerbe:—

"We recorded in the 'Revue Zoologique' for 1854 the occurrence of this bird in Provence. A magnificent male, in fully adult plumage, in the collection of M. Jauffret de Draguignan, was

killed about 1845, near Hyères, by the late Mr. Besson, a naturalist. A second, no less authentic, occurrence was named to us by the custom-house officers stationed on the Petit Rhône, near Saintes-Maries. It is also stated to occur sometimes in Spain."

With regard to this last statement we are at present unaware of any corroborative evidence.

Regarding its occurrence in Algeria the late Captain Loche observes:—

"Its habits are the same as those of the common Heron, to which it bears great resemblance, though it cannot be mistaken for it. It is only accidentally that it has been procured in Algeria, but is said to be common in Abyssinia and the Sudan, Senegambia, Guinea, and down to the Cape of Good Hope. Denham and Clapperton saw large numbers on the lakes and marshes of Bornou and Loggoun, in company with others of the same family."

The Rev. Canon Tristram has also informed us that he saw the present species "in Eastern Algeria, very far south, in a chott."

In his list of the Birds of North-eastern Africa, Dr. von Heuglin has published a short note on the Black-necked Heron, to the effect that it is not rare in Abyssinia and Eastern Senaar, and frequents open fields, and not the vicinity of water; but this latter statement does not agree with the experience of Dr. Hartmann, as detailed below. His notes are as follows:—

"*Ardea atricollis*, which I had repeated opportunities of seeing in Inner Sennâr, Rosêres, and Fazòglo, does not, as stated by Heuglin, frequent the open fields, but is generally found near water. Here it consorts with other Waders, and rests on high trees further inland. It is said to nest in June, on the wooded islands of the Nile, or in swamps, as, for instance, Môjê Diisah and Berket Qâôli."

Mr. Blanford states:—

"I once obtained a specimen of this Heron. It was killed in a swampy meadow, near Adabagi, two marches south of Adigrat, at an altitude of about 8000 feet above the sea."

The present species appears to be distributed all over the Ethiopian Region. Brehm gives its northern range in North-eastern Africa as 14° N. lat.; and it has been collected on the White Nile by Antinori, Heuglin, Brun-Rollet, and others. It seems to be found throughout Western Africa, having been sent from Bissao by Beaudouin, while a specimen is in the Leyden Museum, from Senegambia. Pel obtained it on the Gold Coast; and Mr. Gurney has received it from Ibadan, whence it was sent by Mrs. Hinderer. The natives of this place call it "Ako;" and the eyes were stated to be deep purple, and the food snakes and lizards. It is to be noticed that the colour of the eye, as given above, does not agree with the experience of Mr. Ayres. In Benguela, says Mr. Monteiro, it is "abundant on all the fresh-, salt-, and brackish-water lagoons and marshes along the whole coast of Angola. It is often kept tame in the houses, and, though preferring fish, will eat almost all other kinds of food."

The Black-necked Heron was likewise obtained by the late Mr. Andersson in Damaraland and Ovampo; and Layard has included it in the Birds of the Cape Colony. From Natal and the Transvaal Republic it has been sent by Mr. Ayres; and it was observed in the Zambesi region by Dr. Kirk, who says it was "scattered throughout the marshy regions of the rivers and lakes; commonly found singly or in pairs." The late Baron von der Decken found it in the interior of the Suaheli country. It likewise occurs in Mayotte, according to Mr. Pollen, and is stated by M. Jules Verreaux to have been sent from Madagascar.

We do not transcribe the notes published in Mr. Layard's 'Birds of South Africa,' as that gentleman has very kindly sent us an original communication for the present work, as follows:—

"In my 'Birds of South Africa' I stated my suspicions that this Heron was more common than is generally supposed; and these have been abundantly verified by a more extended acquaintance with the species; indeed in some places their numbers exceed those of the Common Heron (*Ardea cinerea*), with which they are almost always found mingled.

"The huge reed-beds of Verloren Vley and the Berg River literally teem with Herons, Anhingas, and the smallest Cape-Cormorant (*Graculus africanus*), conspicuous amongst them being *A. melanocephala*. It breeds indiscriminately on the dense reed-beds, or on the more exposed sides of the river-banks, and selects equally the summit of a small scraggy bush surrounded by reeds, or the reeds themselves. When using the latter as the platform of the nest, the old birds first precipitate themselves with expanded wings upon the chosen site so as to beat down enough of the upright reed to afford them standing room. The requisite stems are then bent inwards and interlaced till a firm foundation is laid; and the nest, composed of flags and rushes and other soft water-plants, is constructed upon it. It is often a huge mass of material—sometimes a good cart-load—and is generally, when on the river-bank, placed conspicuously, but always towards the water, as if the birds feared no attack from that side, and were ignorant of boats. We found *A. cinerea* adopting precisely similar habits; indeed we often could not tell which nest we had found, if the owner did not happen to be at home, and so had to leave it till our return journey down the river, having made a note of the place, which we carefully scanned, on reapproaching it, with our trusty binoculars (what a blessing these are to the collecting naturalist!). The parent birds, generally one on the nest and the other 'sitting about,' would almost always be seen, and usually suffered us to approach within gunshot.

"I found the average size of the eggs at the Berg River rather larger than that given in the 'Birds of South Africa' (p. 306), which I suspect must have been taken from those of *A. cinerea*; the farmers generally do not discriminate between the two species. Our eggs from the Berg River averaged, axis 2″ 5‴, diam. 1″ 4‴. In colour they exactly resemble those of *A. cinerea*.

"In general habits the two species do not differ; their attitudes and manners are identical, and when on the wing, at a little distance, they are not distinguishable. When close, *A. melanocephala* appears darker; and if the neck should be exserted the black shows, not otherwise. Both utter the same rattling croak on the wing, and feed on the same substances.

"It does not appear to have been met with near Graham's Town, perhaps because the vleys and reed-beds are few, and the rivers in that neighbourhood run between precipitous banks, and are not fringed with reeds as are the more sluggish waters of the western side."

Our good friend M. Jules Verreaux, the well-known African explorer and ornithologist, has given us the following note on this Heron, as observed by him in South Africa many years ago:—

"I may tell you that, without being common in any one part of the Cape of Good Hope, this bird is very generally distributed all through the colony. In the southern part, near the Swart Kop, as far as Buffalo River, it is found not uncommonly either at the edge of the water or amongst the rushes. It will stand for hours on one leg without moving, watching for small fish

or the various sorts of frogs which are so plentiful. It does not, however, despise locusts, which at certain periods are so numerous as to darken the sun for several hours. In the stomachs of many specimens that we have skinned, we have found large quantities of Tadpoles, which, during the season for them, are found everywhere, even in small pools. Small Lizards are also often seized by these Herons. We have almost invariably seen them singly, except during the breeding-season. At this time the pair, after having chosen a high tree near the water for their nesting-place, work together at the construction of their nest, which is formed of dried rushes, large, and very flat, very carelessly constructed; and as generally several pairs unite during the season, the result is that their nests touch each other, the one strengthening the other thereby. Sometimes the *Platalea tenuirostris*, and even *Plotus levaillantii*, build their nests so close together that they touch, and so carelessly that when on weak branches that bend under the weight, and the wind is high, an egg will now and again during the period of incubation slip out and fall down. Still, even when the young are hatched, the whole mixed colony appear to live in perfect harmony, each pair tending only its own progeny. We also observed that when these resorts were not disturbed, each pair returned on the following year to take possession of their old nest, which they repaired with fresh materials, in such a manner, however, as not to increase the bulk.

"Where trees are wanting, or far distant from the water, these birds nest in the rushes, always, however, in colonies, in company either with others of their own or of quite different species. In the locality called Verloren Vley (or the Lost Lake), to the east of the Cape, whenever we were there during the breeding-season we found thousands of nests of more than fifty species of both Waders and Waterfowl, of which the nests were placed so close together that it was impossible to walk there without trampling on either eggs or young; and here we procured the various specimens, of various ages, of this Heron described in MM. Degland and Gerbe's work, and which are now in the National Museum in Paris."

From Natal Mr. Ayres forwarded a specimen in 1859, and says, "The contents of the stomach were Lizards, Locusts, a snake about two feet long, and a large Rat—all swallowed whole, and quite fresh. This bird was shot in a marshy valley about a mile from the coast, and is the only one of the kind I have seen." More recently, however, Mr. Ayres has met with the bird in the Transvaal.

The present species has been well described and figured. We may mention the following as among the principal references relating to its literary history. It was originally described in the Appendix to Denham and Clapperton's 'Travels;' but the author is not mentioned; consequently the describer of the species is variously designated as Mr. Children or Mr. Vigors. Nor have we been able to find out who the author really was, the only contemporary notice of the work that we could discover being in the 'Zoological Journal,' where the zoological portion of the work is said to have been done by Messrs. Children *and* Vigors; and we have thus quoted them as the joint authors. In 1846 a good figure of the adult was given by Des Murs in his 'Iconographie Ornithologique;' and in 1849 Sir Andrew Smith figured both old and young birds in the 'Illustrations of the Zoology of South Africa.'

These latter figures were copied by Reichenbach. The best general account of the species has been given in the recently published 'Ornithologie Ost-Afrika's' of Drs. Finsch and Hartlaub.

The figure in the Plate is taken from an adult bird in our own collection. The description of the adult is from a beautiful skin in Dr. Tristram's possession, sent to him from Transvaal by Mr. Ayres, while the description of the young is copied from Degland and Gerbe's 'Ornithologie Européenne,' this being originally taken from specimens brought home by M. Jules Verreaux from South Africa.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. Natal.

E Mus. H. B. Tristram.

a. Transvaal (*Ayres*). *b*. ♂. Ondonga, Ovampo, November 2nd, 1866 (*Andersson*).



1/3

J.G.Keulemans Lith.

Hanhart imp.

GREAT WHITE EGRET.

ARDEA ALBA

ARDEA ALBA.

(GREAT WHITE EGRET.)

Ardea candida, Briss. Orn. v. p. 428 (1760, partim).
Ardea alba, Linn. Syst. Nat. i. p. 239 (1766).
Ardea egrettoides, S. G. Gmel. Reise d. Russl. ii. p. 193, pl. 25 (1774).
Le Héron blanc, Buff. Hist. Nat. Ois. vii. p. 365 (1780).
Ardea egretta, Bechst. Gemeinn. Naturg. Deutschl. iii. p. 41 (1793, nec Gmel.).
Herodias egretta, Boie, Isis, 1822, p. 559 (nec Gmel.).
Lepterodatis flavirostris, Ehr. Symb. Phys. Aves, fol. *m* (1829).
Herodias candida, C. L. Brehm, Vög. Deutschl. p. 584 (1831).
Herodias egretta, C. L. Brehm, tom. cit. p. 585 (1831, nec Gm.).
Ardea modesta, Gray & Hardw. Ill. Ind. Zool. ii. pl. 49 (1834).
Egretta alba (L.), Bp. Comp. List, p. 47 (1838).
Egretta orientalis, Bp. ut suprà (1838).
Erodius albus (L.), Macg. Man. Brit. B. ii. p. 134 (1842).
Erodius victoriæ, Macg. Man. Brit. B. ii. p. 131 (1842).
Herodias syrmatophorus, Gould, B. of Australia, vi. pl. 56 (1848).
Egretta nigrirostris, Macg. Hist. B. B. iv. p. 460 (1852).
Herodias lateifii, A. E. Brehm, J. f. Orn. 1854, p. 80.
?*Herodias brevirostris*, A. E. Brehm, ut suprà.
Herodias alba (Linn.), Hartl. J. f. Orn. 1854, p. 157.
Ardea melanorhyncha, Wagler, fide Bp. Consp. Gen. Av. ii. p. 117 (1857).
Egretta modesta (Gray), Bp. ut suprà (1857).
Egretta syrmatophora (Gould), Bp. ut suprà (1857).
Egretta melanorhyncha (Wagl.), Bp. ut suprà (1857).
Egretta rueppelli, Bp., fide Gieb. Thes. Orn. i. p. 409 (1872).
"*Herodias torra*, Buch. Hamilt.," Hume, Stray Feathers, vi. p. 472 (1878).

Héron aigrette, French; *Airone bianco maggiore*, Italian; *Silber-Reiher*, *Schnee-Reiher*, German; *de groote Zilverreiger*, Dutch; *Hvit Häger*, Swedish; *Belaïa Tschapoura*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 886; Werner, Atlas, *Coureurs*, pl. 25; Fritsch, Vög. Eur. taf. 42. fig. 5; Naumann, Vög. Deutschl. taf. 222; Gould, B. of Eur. pl. 276; id. B. of G. Brit. iv. p. 22; Schlegel, Vog. Nederl. pl. 190.

♂ *ad. ptil. æst.* candidus: nuchæ plumis elongatis, plumis in jugulo imo elongatis et lanceolatis, plumis in dorso imo longissimis, decompositis, filamentosis: rostro nigro: loris et orbitis nudis flavo-viridibus: iride flavâ: pedibus fuscis, tibiis nudis pallidioribus.

Ad. ptil. hiem. ptilosi æstivali similis sed plumis dorsalibus longissimis nullis, rostro flavo nec nigro.

Adult Male in summer (Lower Volga). Entire plumage pure white, the feathers on the hind crown rather elongated, and those on the lower neck also elongated and pointed; from the lower back a large bunch of filiform hair-like plumes extends beyond the tail; bill black; bare space round the eye greenish yellow; iris yellow; legs dark brown, the bare tibia paler. Total length about 40 inches, gape 6·4, wing 16·3, tail 6·6, tarsus 7·2, bare tibia 4·0, middle toe with claw 4·3.

Adult Female. Resembles the male, but is a trifle smaller in size.

Adult in winter (Butrinto). Differs from the adult in summer in having the bill yellow, and in lacking the long hair-like plumes on the back.

Young. Resembles the adult in winter, but has the legs paler and of a yellowish tinge, and the bill is much paler yellow.

This, the largest of our White Herons, inhabits South-eastern Europe, Western Asia, and North Africa, a smaller form, which I cannot consider specifically distinct, being found in South Africa, India, Eastern Asia, and the Malay archipelago down to Australia. In America it is replaced by a nearly allied, but perfectly distinct, species, *Ardea egretta*, which is smaller in size, and has the bill yellow at all seasons of the year.

The Great White Heron has been obtained on several occasions in Great Britain at different seasons of the year. Mr. Harting (Handb. Brit. B. p. 147) enumerates sixteen instances of its occurrence; but several of them are open to doubt, as the birds were only seen and not obtained. Willughby appears to have been the first to record it as a British species; and Latham and Montagu cite its occurrence in Cumberland and Devon; Yarrell states that one was shot on the Isis, Oxfordshire, in September 1833; and Mr. Strickland writes that one was killed on Hornsea Mere, Yorkshire, in the winter of 1821, and presented to him some years after; another was shot near Beverley, Yorkshire, about 1835 or 1836, and passed into the possession of Mr. James Hall, of Scarborough, near that town; and one is in the collection of Mr. Foljambe, of Osberton, labelled as having been obtained near there. It is said to have occurred in Norfolk; and Mr. J. H. Gurney purchased a specimen of the late Mr. Thurtell, of Eaton, which is said to have been killed in that county. Messrs. Sheppard and Whitear state that they saw one on the banks of the Stour, in Suffolk, in October 1823 or 1824, and that one was observed on the Oakley shores in the spring, and one subsequently on the banks of the Orwell. One is said to have been seen on Romney Marsh, Kent, and one near Penzance in February 1866; one in the collection of Dr. Strong, of Peterborough, is said to have been obtained in Thorney Fen, Cambridgeshire, in June 1849; and Robson (Zool. 1849, p. 4169) records the occurrence of one at Buttermere, Cumberland. Mr. J. H. Gurney, jun., enumerates (Ramb. Nat. p. 262) six instances of its having been obtained or seen, beyond the sixteen cited by Mr. Harting (several being enumerated above); so that it has every claim to be included in the British list.

There are several records of this Heron having been seen in Scotland; but these are naturally open to doubt, and, so far as I can ascertain, there is only one undoubted instance of *Ardea alba* having been obtained there, viz. that of an example in full plumage which was killed in

Haddingtonshire on the 9th June 1840, and is preserved in the collection at Tyninghame House, East Lothian. Mr. Robert Gray says that on referring to Mr. Dunn's copy of the 'Historia Naturalis Orcadensis,' one of the authors has stated in manuscript that two specimens were met with on the island of Damsay, in Orkney.

It has not occurred in Greenland or Iceland, but has been met with on several occasions in Scandinavia. Dr. Sundström informs me that at least five examples have been killed in Sweden, viz. one at Vesterås in November 1856, one near Nyköping on the 24th October 1868, one in Östergöthland on the coast, one late in May 1876 at Björnö, and one late in May 1877 near Eskilstuna; and to this I may add that one is said to have been obtained in Linnæus's time at Araslöf, in Skåne. It has not been observed in Finland; but Sabanäeff remarks that it is said to nest in the Shadrinsk district, in Central Russia; and Artzibascheff says that it is common on the lakes of the Sarpa, especially on those in the southern districts, where it nests. He remarks that there is a great individual variation in size. According to Mr. Taczanowski this Egret is very rare in Poland. There is a specimen in the Warsaw Museum which was killed in Lomza.

Referring to its range in Germany, Von Homeyer (who found it breeding in Silesia) writes (J. f. O. 1863, p. 440):—"Naumann did not know of any instance of this Heron having nested in Germany; and, according to him, its breeding-places are to be found further to the east and south-east—Southern Siberia, Persia, and Syria, the districts of the Black Sea and the Caspian, the Lower Danube, Southern Greece and the surrounding islands, Hungary, and Galicia being the chief resorts of our bird during the breeding-season; whilst it is rarely met with in Northern Africa, especially the north-western parts, in Spain, Southern France, and Italy. In South Germany it is even a rare occurrence to see it during the time of migration, whilst its appearance in Central and North Germany creates quite a sensation. It is more frequently met with in Austria and Silesia, coming over from Syrmia, Southern Hungary, and the Military Frontier. It has as yet never been observed in Anhalt; one specimen was obtained near Berlin in 1824, and another near Erfurt. According to H. Schlegel one specimen of the Great White Heron was killed in the Netherlands in 1855." Its occurrence in Belgium does not appear to be quite authenticated; but it was obtained near Metz by Mr. Holandre, and also at Lindres. Baillon cites its occurrence near Abbeville; and one was obtained on the Somme. It has frequently been killed near the mouth of the Rhone, though not in breeding-dress.

I do not find it recorded from Portugal; and it is very rare in Spain. Mr. Saunders states that he saw one in the Coto de Doñana on the 2nd May; but Colonel Irby writes (Orn. Str. Gibr. p. 184):—"On the Spanish side I never saw one, or heard of a specimen being obtained. I know the bird well, having shot them both in the Crimea and in India, and could not well be mistaken; and although seeing is believing, seeing only is not sufficient evidence to include a bird in a list." I find that Bailly cites two occurrences in Savoy—one at the end of the winter of 1847, on the shores of the Lac du Bourget, and another on the 13th April 1849, on the Isère, near Montinélian, two others having been seen with this latter bird. In Italy it is of somewhat rare occurrence in the northern provinces; but it is not at all uncommon in Sardinia and Sicily in the large marshes. Mr. A. B. Brooke records it as being very common in winter on the former island; Mr. C. Bygrave Wharton saw one at Bigulia, in Corsica, on the 30th April; and Schembri states that it is a rare visitor to Malta.

In Southern Germany it only becomes numerous in the extreme south-eastern districts. Dr. Fritsch says (J. f. O. 1871, p. 391) that it is extremely rare in Bohemia, where it usually appears in spring, apparently from Hungary. One was obtained near Frauenberg on the 20th April 1831, one near Sichelsdorf on the 3rd of April 1849; and it has occurred at Weisswasser, Podebrad, Wittingau, and the Bestrever lakes near Frauenberg. In Transylvania, Messrs. Danford and Harvie-Brown write (Ibis, 1875, p. 424), it is "only found during migration, there being no record of its having bred in the country. We heard from Herr Buda that there were many in the Hátzeg district this year after we left. The specimen in the Klausenburg Museum was shot at Apahída in November 1867, as recorded by Herr Ottó." It breeds in many of the larger marshes of Hungary, and the countries skirting the Danube, this portion of Europe being its head quarters; and Messrs. Elwes and Buckley remark (Ibis, 1870, p. 333), it is "very common in the marshes of Macedonia, where we have seen as many as fourteen together. The great size and snowy plumage of this White Heron make it a very conspicuous object among the tall reeds, or when flapping slowly along above them. We cannot say whether it breeds here; but in Bulgaria, though not so numerous as in Macedonia, it certainly does." According to Dr. Krüper it is only sparingly found in Greece, not breeding there, being, as a rule, only a winter visitant; and Lord Lilford writes of it (Ibis, 1860, p. 346):—"Common in Epirus in winter, particularly at Butrinto. Not nearly so difficult of approach as most of its congeners, although I never observed it to skulk amongst the reeds and aquatic herbage, as *Ardea cinerea* often does. I could not find out that it ever remains to breed in Epirus; but the natives are so singularly unobservant of all birds, except the Anatidæ, that it is difficult to extract any information from them."

In Asia Minor it is said by Dr. Krüper to be commoner than in Greece; but Canon Tristram remarks that in Palestine he found it scarcer than *Ardea garzetta*, and very wary. It is, he adds, a spring and summer visitant to that country. It is widely distributed in Africa; and there, as in Asia, is a smaller form differing from the European bird in nothing but size, in which it agrees with Chinese examples. In North Africa, however, the large form is found; but where the two meet I am unable to decide. Captain Shelley writes (B. of Egypt, p. 267), "The Great White Heron is plentiful in Lower Egypt and the Fayoom. On lake Mareotis I have frequently observed very large flocks of this species wading in the shallows at a considerable distance from the land; and on Birket el Korn, in the Fayoom, I have seen single specimens on several occasions; but, as it is a very shy bird, I was never able to approach within shot. I have also seen it in the collections of other travellers from Egypt." Von Heuglin believes that it breeds in the Nile delta. He observed it in April and May on the Tana lake and in Wadla; and Lefebvre met with it late in the latter month at Adowa, in Abyssinia. In the winter months it is common on Lake Menzaleh and throughout the Blue- and White-Nile districts, being even more numerous in Abyssinia, where it occurs to an altitude of 9000–10,000 feet. It is said to be tolerably common in Algeria, but, Loche says, is more frequently seen about the lakes of the province of Constantine than about those of Oran. Canon Tristram writes (Ibis, 1860, p. 77):—"Three or four of these magnificent Herons used to resort to the salt lake of Waregla. Again I met with them at Dzouia, Temaçin, Tamerna, and Tuggurt, but always in small flocks, and very shy. Never found, like their congeners, in the ditches or under palm trees, but in the wide, open

marshes and chotts, where they were extremely wary. They are only winter visitants to the Sahara. I was informed that they breed near Benzert, on the Tunisian coast, but did not see them there." Colonel Irby saw this species once on the lakes of Ras-Doura, on the 26th of April, but did not succeed in shooting it. Mr. Godman records its occurrence in the Azores; but Dr. Dohrn says that it has been incorrectly said to occur in the Cape-Verd Islands, as *Ardea garzetta* is the only White Heron found there.

On the continent of Africa, however, it is found, subject only to variation in size, down to the Cape colony. Mr. C. J. Andersson sent home a specimen, obtained either in Damara or Ovampo Land, in breeding-dress; and Mr. Layard writes (B. of S. Afr. p. 308):—"A pair of these most lovely Egrets, male and female, have been shot at different times in Zeekoe Vley, between Cape-town and Simon's Bay. I have myself seen white Egrets wading about that piece of water, and also on the marsh nearer to Kalk Bay, but always too far off to determine the species. I have also seen white Egrets on the marsh below the Observatory, and on the rocks at Robben Island. They are, however, generally so wary as to be unapproachable. Mr. Atmore tells me it is common at the Knysna, but very shy, and breeds on a small rock in the sea, east of the Heads; he was too late (December) for eggs."

It has been recorded from the Lydenburg District, the Matabili country, and other parts of South and South-east Africa; but it is rather difficult to verify the various records of its occurrence, as another species, *Ardea intermedia*, is also found there.

Subject only to variation in size, the Great White Heron is found in Asia as far east as China, and southward down to Australia, and, in all probability, to New Zealand also; but, owing to the want of a sufficiently large series of specimens to examine, I am compelled, to a large extent, to depend on the notes of the various collectors who have explored the different countries. I give below a few particulars relative to the variation in size of examples from different parts of the globe, from which it will be seen that, as a rule, Asiatic specimens run smaller than our European bird; but I cannot look on them as being specifically distinct.

The present species is found on the Caspian; Major St. John states that he saw it every year on the Kara agatch river, west of Shiraz, where there is a colony of these birds; and Mr. Blanford met with it in Baluchistan, where, however, it is not common. Mr. S. Scully, writing on the ornithology of Eastern Turkestan, says (Stray Feathers, iv. p. 196):—"In winter this species was more common about Kashghar (where four birds were shot) and Yarkand than *Ardea cinerea*. It was never seen in spring or summer, having then, it was reported, migrated northwards, towards Aksu, to breed. It frequented marshy places and the banks of small streams, feeding on fish. The Turki name for this species (which Mr. Hume informs me is the large European form, and not the Lesser White Heron of India) is *Ak Ukar*, 'White Heron.'" Dr. Jerdon writes:—"The Large Egret is distributed throughout India to Ceylon, extending, if Gould's *syrmatophorus* be rightly identified with this species, from Europe through most of Asia and Africa to Australia. It is, of course, most abundant in the better-watered districts, but is found everywhere feeding in rivers and tanks and roosting on trees. It breeds, in company, on trees, often in, or close to some village, making the usual nest of sticks, and laying three or four eggs of a bluish green colour. This species is said to make its nest in Europe among reeds; but this is quite opposed to the habits of all the Egrets."

It is recorded from Ceylon by Mr. Holdsworth and Captain Legge; and it has been said to have occurred in the Andaman Islands; but the late Lord Tweeddale includes only *Ardea intermedia* among the birds found there. It appears, however, to occur in Burmah and the Tenasserim provinces, and is common in China, in the southern provinces of which, Mr. Swinhoe says, it is a resident, breeding in the northern portions of the empire. It probably occurs in South-east Siberia; for Schrenck saw a feather of an Egret which was shot near the Nicholaieffsk Post, and which he believes to have been *Ardea alba*; but he never heard any thing further respecting its occurrence there; while Dr. Radde says that it occurs in the Central Argunj valleys, where he observed it at Kailassutui in June 1856, and in April on the Lower Udir river. He does not, however, appear to have obtained a specimen. How far the present species occurs in the Malay archipelago I cannot with certainty state; for *Ardea intermedia* appears to be the species usually met with there; but *Ardea alba* appears to be found in Australia.

Mr. Gould (*l. c.*) described the Australian bird as distinct; but Blyth (Ibis, 1865, p. 36) says that it does not differ from true *Ardea alba*; and in this view Mr. Gould subsequently concurred. He states that it is sparingly dispersed over the Australian continent. He met with it near the mouth of the Hunter, but more frequently on the banks of the Clarence and other rivers less frequented by civilized man. He also observed it in Tasmania, in the vicinity of George's River and other unfrequented streams to the northward of the island. As regards the species found in New Zealand I am in considerable doubt. Dr. Finsch (J. f. O. 1872, p. 171) says that the New-Zealand bird cannot be distinguished from the American *Ardea egretta*; but the measurements given by Buller differ widely from those of the American bird, and agree much more closely with those of European examples of *Ardea alba*; but he distinctly states that the New-Zealand bird never has the bill black in the summer, but yellow at all seasons of the year.

In general habits the present species resembles the common Heron; but it is slighter and more elegant in appearance, and may at once be distinguished by its pure white colour. Like the common Heron, it is generally to be found in marshy places or on the edge of streams, waiting for small fish, often standing in water that reaches up to the tibia. It usually stands more erect than the common Heron, and looks more slender; and when on the wing it also appears longer; for its legs stretch out further behind it than do those of that species, and its wings appear longer and more slender; but otherwise its flight closely resembles the flight of that bird, though it is rather stronger and quicker on the wing. It is companionable, especially during the breeding-season, not only towards others of its own species but also towards other Herons. It is said to become very tame when kept in confinement, and will consort with domestic poultry. Its call-note is said to be a harsh deep *rar*, uttered now and again, though not often. Its food consists chiefly of small fish, but also of frogs, aquatic insects, worms, mice, and possibly also of young birds. It usually fishes during the daytime, and not, so far as I can ascertain, by night, and resorts to both running and still water in search of prey.

It nests on islands and in large morasses, its nest being placed on trees, and not, as a rule, like the Lesser Egret's, on the ground amongst the reeds, though it is occasionally said to breed amongst the dense reed-thickets in the large morasses of the Banat.

Its nest is placed on one of the strong branches of a tree, and is constructed of dry twigs, dry reeds and flags, and is lined with finer leaves of aquatic plants; and the eggs, usually three or

four in number, though I have one clutch of five, are pale greenish blue in colour. Specimens in my collection, from Hungary, vary in size from $2\frac{10}{40}$ by $1\frac{26}{40}$ to $2\frac{16}{40}$ by $1\frac{28}{40}$ inches.

Although, as a rule, the present species does not breed in Germany, yet there is undoubted evidence to show that it has nested in Lower Silesia (Nieder-Schlesien); for Alexander von Homeyer has published (J. f. O. 1863, pp. 440-447) some interesting notes respecting a pair of these Herons which nested in a large forest about a German mile north-east of Glogau in 1863. In this forest there is a heronry of about 150 nests of *Ardea cinerea*, on old fir trees 70 to 80 feet high; and close to the edge of this heronry a pair of *Ardea alba* nested also on a fir tree within about eight paces from the nearest Heron's nest. The nest was slightly built, and could almost be seen through, and was placed on one of the medium-sized trees. He visited the heronry at various times between the 31st May and 28th June, on which latter day he found that the young, three in number, were hatched, and were then probably several days old. Their cry he compares to the syllables *kekkekkek*, *kekkekkek*, like that of the young common Heron, but clearer, and not so harsh in tone. On the 22nd July the largest of the young birds had left the nest and flown to the nearest adjacent tree, and as Von Homeyer had to leave the neighbourhood, he had it shot and stuffed, and sent it to the Berlin Museum; and subsequently both the remaining young birds and one of the old ones were shot, although the forester and others promised to protect them. The remaining parent bird left that part of the country early in August, probably disgusted at the treatment its family and mate had met with.

So far as I can judge from the series of specimens I have examined, and from the various information I have collected together, there are only three good species of the larger White Herons which lack the nuchal crest, viz. *Ardea alba*, *Ardea egretta*, and *Ardea intermedia*; and in this view I agree with Mr. Hume, who has written some excellent notes on the White Herons of India (Stray Feathers, vi. pp. 472–480), except that he subdivides *Ardea alba* into two species, and grants the smaller form specific rank under the name of *Herodias torra*, Buch. Hamilton. This form differs only in size, and, like the larger European bird, has the bill black in summer and yellow in winter; but, according to Mr. Hume, the tarsus is darker than in specimens from Europe, though I think that little stress can be put on this circumstance.

It appears that examples of *Ardea alba* from various localities differ in size as follows:—

Lower Volga and Albania: gape 6·0–6·4, wing 16·1–16·3, tail 6·4–6·5, tarsus 7·0–7·2, bare tibia 4·0–4·2.
Caspian Sea: gape 5·85, wing 16·2, tail 6·4, tarsus 6·8, bare tibia 3·5.
Syria: gape 6·0, wing 16·0, tail 6·5, tarsus 7·0, bare tibia 4·0.
Pagani river, Africa: culmen 4·4, wing 13·8, tarsus 5·7, bare tibia 3·5.
India (*fide* Hume, *l. c.*): bill 3·72–4·6, wing 13·2–15·2, tail 5·6–6·7, tarsus 5·7–7·0, bare tibia 3·35–4·8.
Andamans and Tenasserim (*fide* Hume): bill 4·0–4·45, wing 13·3–15·0, tail 5·4–6·2, tarsus 5·6–6·3, bare tibia 3·45–4·3.
China: culmen 3·9–4·5, wing 13·8–15·0, tail 5·6–6·4, tarsus 5·5–6·8, bare tibia 3·4–4·5.
Australia (*fide* Hume): bill 4·3, wing 13·0, tail 5·0, tarsus 5·3, bare tibia 3·62.

Whether the New-Zealand bird should be separated from *Ardea alba* or not I cannot, as above stated, venture to decide; but certainly it differs in size from *Ardea egretta*, though it is said to have the bill yellow at all seasons of the year, like that species. Buller gives the dimensions as follows—bill 5·0, wing 17·0, tail 7·0, tarsus 6·25, bare tibia 4·0; and Mr. A. O.

Hume states that a female from Otago, New Zealand, examined by him, measured—bill 4·5, wing 15·2, tail 6·8, tarsus 5·5, bare tibia 3·99.

Ardea egretta, the American Great White Egret, differs from *Ardea alba* in being smaller in size and in having the bill yellow at all seasons of the year, with occasionally a little brown coloration at the tip. I have measured the series of examples from Central and South America in the collection of Messrs. Salvin and Godman, and find the variation in size as follows—gape 4·8–5·7, wing 14·2–15·6, tarsus 5·5–6·3, bare tibia 3·6–4·6. A larger form is stated by Baird to inhabit the coast of Southern California, and probably the Rio Grande of Texas, which he refers to under the name of *Herodias egretta*, var. *californica*, and gives the measurements as —wing 17·0, tarsus 6·7, bill 5·0. I doubt, however, if this large form inhabits Southern Texas, as a specimen I obtained near San Antonio, in that State, measures—gape 5·0, wing 14·0, tail, 5·5, tarsus 5·6, bare tibia 3·1.

Ardea intermedia, Wagler (Isis, 1829, p. 659), which inhabits South Africa, India, China, and the Malay archipelago, comes very close to *Ardea egretta*; and it is uncertain whether these two species should not be united. Like *Ardea egretta* it is said to have the bill yellow, tipped with blackish brown, at all seasons of the year, but is smaller than that species. Hume gives the measurements as follows, viz.:—from Continental India, bill 2·68–3·09, wing 11·15–12·91, tail 5·0–5·9, tarsus 4·1–4·66, bare tibia 2·35–3·1; and from the Andamans, bill 2·81–3·18, wing 11·15–12·0, tail 4·5–5·2, tarsus 4·35–4·5, bare tibia 2·4–2·8.

Two specimens from China in Mr. Seebohm's collection measure—culmen 2·85, wing 11·7 and 12·2, tail 5·1 and 5·2, tarsus 4·3 and 4·4, bare tibia 2·6 and 2·7; and one, a female, from Java, measures—culmen 3·0, wing 11·7, tail 4·8, tarsus 4·0, bare tibia 2·4.

I have not examined a specimen from South Africa; but Mr. Ayres gives (Ibis, 1877, p. 349) the measurements of a female from the Transvaal as—gape 3·5, wing 11·75, tail 5·5, tarsus 4·5.

The specimens of *Ardea alba* figured are the adult birds in summer and in winter dress above described, and are in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Lower Volga, summer (*Stader*). *b*, ♂ *ad.* Caspian Sea. *c*, *ad.* Butrinto, winter of 1869 (*Hanbury-Barclay*).

E Mus. Berol.

a. Syria (*Hemprich & Ehrenberg*).

E Mus. G. E. Shelley.

a, *ad.* Pagani river, Africa (*Dr. Kirk*).

E Mus. H. Seebohm.

a, ♂ *ad.* Canton, China, April 1860. *b*, ♂. Formosa. *c*, ♀. Hongkong, April 1860. *d.* Amoy, November 1866. *e.* Hainan, February 1868. *f*, ♂. Ningpo, August 1872. *g.* Hankow, winter (*R. Swinhoe*). *h.* Shanghai, February 24th, 1874 (*A. Michie*).



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J. Wolf & J. Keulemans, lith. Hanhart, imp.

LITTLE EGRET.
ARDEA GARZETTA

ARDEA GARZETTA.

(LESSER EGRET.)

?*Ardea egretta*, Briss. Orn. v. p. 431 (1760).
Ardea garzetta, Linn. Syst. Nat. i. p. 237 (1766).
Ardea niuea, S. G. Gmel. Reise d. Russl. i. p. 164 (1770).
Ardea santodactylos, S. G. Gmel. Reise d. Russl. iii. p. 253 (1774).
Ardea nivea, Gmel. Syst. Nat. i. p. 640 (1788).
Ardea xanthodactyla, Rafinesque-Schmaltz, Caratteri, p. 5 (1810).
Herodias garzetta (L.), Boie, Isis, 1822, p. 559.
Herodias jubata, C. L. Brehm, Vög. Deutschl. p. 586 (1831).
Ardea nigrirostris, J. E. Gray, Zool. Misc. p. 19 (1831).
Ardea orientalis, J. E. Gray, op. cit. p. 20 (1831).
Egretta garzetta (L.), Bp. Comp. List, p. 47 (1838).
Egretta orientalis (Gray), Bp. ut suprà (1838).
Ardea nigripes, Temminck. Man. d'Orn. iv. p. 377 (1840).
Erodius garzetta (L.), Macg. Man. Brit. B. ii. p. 135 (1842).
?*Egretta brachyrhynchos*, L. Brehm, Naumannia, 1855, p. 290.
?*Egretta lindermayeri*, L. Brehm, ut suprà.
Egretta jubata, L. Brehm, ut suprà.
Garzetta egretta, Bp. Consp. Gen. Av. iii. p. 118 (1857).
Garzetta orientalis (Gray), Bp. tom. cit. p. 119 (1857).
Garzetta nigripes (Temm.), Bp. tom. cit. p. 119 (1857).
Garzetta nivea (Gmel.), Tacz. Bull. Soc. Zool. de France, 1877, p. 159.

Héron garzette, French; *Garza blanca*, Spanish; *Garzetta*, Italian; *Agrett*, Maltese; *Beiadi*, Arabic; *Bou-fala*, *Bou-bliga*, Moorish; *Seidenreiher*, *kleiner Silberreiher*, German; *de kleine Zilverreiger*, Dutch; *Malaya belaïa Tschapoura*, Russian.

Figuræ notabiles.

Werner, Atlas, *Coureurs*, pl. 26; Fritsch, Vög. Eur. taf. 42. fig. 2; Naumann, Vög. Deutschl. taf. 223; Gould, B. of Eur. pl. 277; id. B. of G. Brit. iv. pl. 23; Schlegel, Vog. Nederl. pl. 191.

♂ *ad. ptil. æst.* candidus: nuchæ plumis duabus angustis longissimis, juguli plumis elongatis angustatis: dorsi plumis longissimis filamentoso-decompositis: rostro pedibusque nigris, digitis flavis: loris nudis violaceis: iride pallidè flavâ.

Ad. ptil. hiem. candidus, dorsi et nuchæ plumis elongatis nullis.

Adult Male in spring (Seville, Spain, May 1869). Entire plumage pure white; from the nape two narrow

long feathers spring, these being over seven inches long; a bunch of elongated feathers spring from the lower throat, and are slightly tinged with cream-colour; and from the lower back a large bunch of elongated recurved hair-like plumes extend beyond the tail; bill black, except at the base of the lower mandible, where it is yellowish grey; bare space about the eye lead-blue; iris pale yellow; legs black; the feet tinged with yellow, soles yellow. Total length about 22 inches, culmen 3·5, gape 4·2, wing 11·0, tail 4·5, tarsus 4·4, bare portion of tibia 2·5.

Adult Female. Resembles the male, but is rather smaller in size.

Adult in winter. Differs from the adult in summer in lacking the dorsal and occipital plumes.

Young. Pure white, the feathers on the lower neck rather elongated, but lacking the hair-like dorsal plumes and the long nuchal feathers; legs paler, and tinged with yellowish; bare lores olivaceous.

In Europe the Lesser Egret inhabits only the southern countries, being a rare straggler in the northern and central portions, but ranges far south in Africa, and is found right across the continent of Asia, and southward down to the Malay archipelago and Australia.

In Great Britain it has certainly occurred on several occasions. Mr. Harting cites (Handb. of Brit. B. p. 148) ten instances of its occurrence in England, one in Ireland, and one in Scotland, but some of these are doubtful; and Mr. J. H. Gurney, jun., says (Rambl. Nat. p. 285) that of all the recorded occurrences, five only appear to be above suspicion; and he expresses great doubt respecting the authenticity of the example in the Wisbeach Museum, said to have been killed at Sleaford, Anwick, South Lincolnshire, in December 1851. Mr. Robert Gray does not include this species in his work on the birds of the west of Scotland. The only occurrence on record in Ireland is of the one said to have been obtained in December 1788 by the Rev. J. Elgee, of Wexford; but the specimen has long been missing, and it is impossible to state with certainty whether it really was a Lesser Egret.

It has not been obtained in Norway, Sweden, or Finland, and is very rare in Central Russia. According to Severtzoff it has once been killed in the Tamboff Government; and Artzibascheff refers to it as being rare on the Sarpa, but much commoner at the mouth of the Volga. Lichtenstein states that it has been obtained in Courland; and Taczanowski says that it is seldom seen in Poland.

It is a very rare straggler to North Germany; but Von Homeyer says (J. f. O. 1870, p. 230) that it has been obtained on several occasions near the Lake of Trachenberg, on the property of Prince Hatzfeld. Dr. Rey states that it has been once killed on the Salziger See; and Gloger records its occurrence in Silesia.

It has been met with in Holland as a rare straggler, and has once occurred in Luxemburg. In the north of France, according to Degland and Gerbe, it is very seldom seen; but in the southern departments it becomes commoner, and there is little doubt that it breeds in the Camargue. Lacroix says that it occurs on passage in the French Pyrenees, where he has seen it in April and May, and even as late as June, but never in the winter season. Mr. Howard Saunders, who remarks that it occurs in suitable localities throughout Spain, adds (Ibis, 1871, p. 391), it is "abundant in the Cotos of Doñana, where it doubtless breeds; but I have never been able to obtain its eggs, owing to the unexampled drought which has prevailed for three successive

springs, viz. 1868, 1869, 1870;" and Colonel Irby writes (Orn. Str. Gibr. p. 184), "the Little Egret is the least common of the small Herons in Andalucia, and, as Favier observes, some remain very late, as I have seen and obtained them on the 17th of November. The greater quantity arrive about the middle of April, and linger here and there on their route, gradually passing on to their breeding-places on the borders of the marisma. They nest on trees, in some seasons, near Rocio, but are so molested that they change their ground frequently. When on the wing, and within a short distance, the black legs and bill are very apparent; and this, added to the fact of their being smaller than *Herodias alba*, serves as a good distinguishing mark for the species." Von Homeyer says that it is common near Valencia, and he met with it on several occasions on the Prat and the Albufera, in the Balearic Isles.

Passing eastward, again, I find it recorded by Bailly as occurring from time to time in Savoy, on the banks of the Rhône, the Isère, and on the lakes of Bourget and Marches; and in Italy it is said to be common on the spring and autumn passage; it is very abundant in Sardinia in winter, and numerous in Sicily in spring, some remaining to breed on both islands. In Malta, according to Mr. C. A. Wright (Ibis, 1864, p. 143), the Lesser Egret is common in the spring and autumn, and large flocks are often seen passing in company with Purple Herons.

In Southern Germany the present species is not generally found until one reaches the Hungarian frontier. Dr. Fritsch states (J. f. O. 1871, p. 391) that in Bohemia it is a much rarer straggler than *Ardea alba*; and there is, he adds, a specimen in the Frauenberg Museum which was killed on the lake at Rosenberg in 1858. The late Mr. E. Seidensacher informed me that it was killed near Cilli, in Styria, in May and early in September 1856. In Transylvania, Messrs. Danford and Harvie-Brown write (Ibis, 1875, p. 425), it is "rare. It is reported to have nested near Felvincz. We saw a specimen which had been killed this year at Maros, Vásárhely, and received one shot at Hátzeg. Herr Csáto says they visit the Strell valley in little flocks in May and June." In the marshes of Hungary and in suitable localities along the Danube, as well as on the islands in that river, the present species is by no means uncommon during the summer; and I often saw it below Belgrade. According to Messrs. Elwes and Buckley (Ibis, 1870, p. 334) it "arrives in large numbers on the Danube about the first week in May, and breeds in colonies in company with the Squacco and Purple Herons. One of the large islands below Rustchuk is a great breeding-place for Herons; but they had not arrived on the 2nd of May. In a dense thicket of willows, at this time of the year four feet deep in water, there are hundreds of nests; and a friend who visited the same spot a month later found them all tenanted by three or four different species of Herons."

Dr. Krüper says that it is commoner in Greece than *Ardea alba*, and does not winter there. It arrives in considerable numbers late in March, and remains several weeks on its way. In the Cyclades it is a migrant, and is numerous from September to the end of April in Albania; and, according to Lord Lilford, it is "very common in winter on the coasts of Epirus, in which province some few remain to breed. I observed this species on the Bojana river and the Lake of Scutari, in Albania, in great numbers in August 1857. The birds of this species which frequent the shores of the Bay of Butrinto in the winter, and spend the day in wading about the marshes, collect their forces regularly about sunset, and fly in a compact body to the jungles at the head of the lake, where they roost. They appeared to pursue exactly the same course every

evening; and I used always to consider their appearance in a body as a sign that it was time to take up my post for shooting Ducks in a small marshy pool between the proper right of the Butrinto river and the rocks which shut in the valley to the north. The Egrets almost invariably flew over this pool from west to east, and generally preceded the arrival of the first flight of Ducks by about ten minutes."

In Southern Russia it is by no means uncommon. Mr. Goebel says that it breeds in the marshes of Sokolow, in the Uman district, but in quite inaccessible places. In the autumn it is found in pairs on the smaller ponds. In the summer of 1867 several were seen during the summer: in 1868 the last was observed on the 2nd October, in 1869 the first on the 10th April, and the last on the 27th September. It occurs in Asia Minor, where Mr. Danford observed it on some small marshes to the north of the Ala-dagh; and Canon Tristram found it common in Palestine, but scattered and not very sociable. In North-east Africa, according to Captain Shelley, it is abundant both in Egypt and Nubia, "and is a resident in those countries throughout the year. It is usually to be met with singly by the edge of the water, and is equally partial to both the river and pools, feeding almost exclusively on fish. Early in April it begins to put on its breeding-plumage." Von Heuglin says that it is very generally distributed in North-east Africa; and he believes that it must breed there, as he often saw it in full breeding-dress from April to June. In autumn and winter he met with it singly and in large or small flocks along the Nile, and in July and August on the shores of the Red Sea. Mr. Blanford found it common on the coast of Abyssinia; and he believes that he saw one in the highlands. Loche records it as being a resident in Algeria, especially about the great lakes, and as far south as the Sebkhas. Mr. Salvin met with it at Zana; and Canon Tristram found it (Ibis, 1860, p. 77) "universally distributed in small numbers wherever a suitable locality exists, and frequenting familiarly the gardens and ditches of the oases. It breeds in society on the lake Fetzara, and doubtless in more southern marshes also." M. Favier says that it is not infrequent near Tangier, occurring in small flights on passage. They pass north in April, returning in November and December; but some few remain there to breed.

Mr. Godman saw specimens of this Egret in a collection at Terceira, Azores, said to have been killed on that island; and he adds that it is also found in the Canaries; and, according to Dr. Dohrn, it is resident and abundant in all the Cape-Verd Islands. On the continent of Africa it is found down to the Cape of Good Hope. Mr. Andersson writes (B. of Damara Land, p. 290):—"This is a scarce bird in Damara and Great Namaqua Land, and very local; but it is pretty common on the rivers flowing into and out of Lake Ngami, and it also occurs on the Orange River. It associates in small flocks, and feeds on fish, lizards, frogs, crustacea, and aquatic insects." According to Mr. E. L. Layard (B. of S. Afr. p. 308), "specimens of this beautiful Egret, both in winter and nuptial dress, have been procured in the neighbourhood of Cape-town, also at Colesberg and at the Knysna. The stomachs of this species and *Ardea egretta* which I have examined contained multitudes of small aquatic shells (*Physopis africana* and *Succinea delalandi*)." Mr. Barratt obtained it near Pretoria and Potchefstroom both in winter and summer; and Mr. Ayres records it as being much more numerous about the swamps of the Transvaal than it is in Natal.

According to Hartlaub the Little Egret of Madagascar, *Ardea idæ*, Hartl. (*Ardea elegans*,

Hartl., and *Ardea xanthopoda*, Pelz.), is very distinct from *Ardea garzetta*; and I understand from Professor Newton, who possesses a specimen, that it is very closely allied to the Indian *Ardea leucoptera*.

In Asia it is very widely distributed; Mr. Blanford saw many at Isfahán, in Persia; and, according to Dr. Jerdon, it is very abundant throughout India. Captain Butler found it numerous in Northern Guzerat; and Messrs. Hume and Davison record it as being common in the plains of Tenasserim. Lord Tweeddale received specimens from the Andamans. In Mr. Swinhoe's collection are many specimens from China, Hainan, and Formosa; and Père David says that it is abundant in China, and winters in the central and southern portions of that empire, being more numerous in the south than *Ardea alba*, which, on the other hand, is the commonest species near Pekin. Messrs. Blakiston and Pryer record it (Ibis, 1878, p. 224) as being a very common bird in Southern Japan; and they obtained one specimen in Yezo. It breeds in Japan in company with *Nycticorax griseus*.

It is said to occur in Celebes, the Philippines, Moluccas, and New Guinea; and Mr. Gould records it from near Brisbane, in Australia. Mr. Gould separates the North-Australian species, *Ardea melanopus*, Wagl. (*Herodias immaculata*, Gould, B. of Austr. vi. p. 58), from *Ardea garzetta*; but Schlegel affirms that it cannot be considered specifically separable, and Hume says that it only differs in being somewhat smaller in size and having much shorter feet. According to Gould (Handb. B. Austr. ii. p. 304), this form is "a native of the northern portion of Australia, and is extremely abundant in almost all parts of the Coburg Peninsula, both on the open sea-beach and in the secluded parts of the harbour." In America the Lesser Egret is replaced by *Ardea candidissima*, a perfectly distinct species.

In general habits the Lesser Egret differs but little from the other Herons. So far as I have seen, it is eminently gregarious, and not only breeds in colonies, but is usually to be seen at other seasons of the year in larger and smaller flocks. It is, compared with its allies, not a shy bird, and may be stalked with comparative ease unless it has been subjected to much persecution, when, as may be supposed, it becomes wary, and frequents such places as cannot easily be approached. It is essentially a marsh-bird, preferring swampy localities well overgrown with aquatic vegetation to any others; and its nesting-haunts are often situated in almost inaccessible swamps. I have seen small flocks of this Egret on the Lower Danube, but was not able to visit its breeding-haunts near Belgrade, where I was assured large numbers still breed; but on both occasions when I visited that town I was unable to arrange my journey so as to be there during the breeding-season. I was told that it nests both on low trees and on the rushes, or on the ground itself, constructing its nest of dry twigs and reed-stems, lining it with finer leaves of aquatic plants, grass, and roots; and the eggs, usually four in number, are deposited late in May or early in June. In colour they are very pale greenish blue, unmarked; and eggs in my collection, taken by Zelebor, in Servia, on the 2nd of June, measure from $1\frac{28}{40}$ by $1\frac{10}{40}$ to $1\frac{31}{40}$ by $1\frac{11}{40}$ inch in size, and are almost pure oval in shape, tapering but slightly towards one end.

The food of the Lesser Egret, like that of its ally *Ardea alba*, consists of small fishes, frogs, worms, aquatic insects and their larvæ, but especially of small fish when obtainable in abundance.

The various species of White Herons have been not a little confused, and the synonymy is

therefore by no means easy to unravel; but, with what material I have been able to collect together, I have done my best to work out the synonymy of those which occur within my limits; and it is satisfactory to find that all I have seen tends to confirm the views expressed by Professor Schlegel in his article on the Herons in the 'Mus. Pays-Bas.' He appears to be quite correct in stating that there is no specific difference between examples of *Ardea garzetta* from Europe, Asia, Africa, the Malay archipelago, and Australia. From *Ardea candidissima* it is easily recognizable, as that bird has a full occipital crest, about as long as the bill, instead of two or three long pendent feathers. In Eastern Asia, however, there is a species closely allied to the American *Ardea candidissima*, viz. *Ardea eulophotes*, Swinhoe (Ibis, 1860, p. 64), but which seems to be quite distinct. I am indebted to Mr. Seebohm for the loan of the type, which is in full nuptial dress, and differs from *Ardea garzetta* in that plumage in having a thick bunch of elongated feathers on the occiput, in having the pectoral plumes thicker and shorter, and the dorsal plumes also shorter, and in having an orange-yellow bill, becoming flesh-coloured and purplish on the lores and round the eye; iris white; legs greenish black; feet olive-brown, patched in places with yellow. Total length 27 inches, wing 9·25, gape 3·75, tarsus 3·0, bare tibia 1·75, middle toe 2·25, its claw 0·25.

There is no very great difference in measurements of examples of the Lesser Egret from different parts of the globe where it is found. Specimens I have examined vary as follows:—

Europe: culmen 3·2–3·5, wing 10·5–11·0, tail 4·3–4·5, tarsus 4·2–4·4, bare tibia 2·3–2·5.
Egypt: culmen 3·3, wing 10·8, tail 4·2, tarsus 4·22, bare tibia 2·47.
Knysna, S. Africa: culmen 3·15, wing 10·10, tail 4·25, tarsus 4·25, bare tibia 2·32.
Pagani river, Africa: culmen 3·5–3·6, wing 10·8–11·1, tail 4·0–4·5, tarsus 3·95–4·5, bare tibia 2·3–3·2.
China: culmen 3·0–3·4, wing 10·3–10·8, tail 4·1–4·5, tarsus 3·7–4·2, bare tibia 2·0–2·5.
Japan: culmen 3·15–3·3, wing 10·8, tail 4·3–4·5, tarsus 3·85–4·0, bare tibia 2·0–2·1.
Java: culmen 3·15, wing 9·7, tail 3·8, tarsus 3·4, bare tibia 1·8.
Philippines: culmen 3·4, wing 10·9, tail 4·3, tarsus 3·95, bare tibia 2·4.

The specimens figured are an adult male, in full breeding-dress, in the foreground, and a young bird, in winter dress, in the background.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, *b*, ♂ ♀. Seville, Spain, May 1869. *c*. Egypt, winter. *d*. Knysna, S. Africa (*Cutter*). *e*, ♀. Leyte, Philippines, October 1877 (*Everett*).

E Mus. G. E. Shelley.

a, *b*, *c*. Pagani river, Africa (*Dr. Kirk*).

E Mus. H. Seebohm.

a. China. *b*. Hankow, China, winter. *c*. Amoy, April 1861. *d*. S.W. Formosa, 1861. *e*. Hainan, China, February 1868 (*R. Swinhoe*). *f*. Ningpo, China, November 1872 (*Dr. Mackenzie*). *g*. Tokio, Japan. *h*. Tokio, Japan, March 27th, 1877 (*Pryer*). *i*. Java.



J.G.Keulemans ath

Hart[illegible] imp

1. BUFFBACKED HERON.
ARDEA BUBULCUS.
2. SQUACCO HERON.
ARDEA RALLOIDES.

ARDEA BUBULCUS.

(BUFF-BACKED HERON.)

Ardea candida minor, Briss. Orn. v. p. 438 (1760).
?*Ardea ibis*, Linn. in Hasselq. Voy. & Trav. in the Levant, p. 198 (1766).
Tantalus ibis, Linn. Syst. Nat. i. p. 241 (1766, partim).
?*Ardea lucida*, Rafinesque-Schmaltz, Caratteri, p. 5 (1810).
Ardea æquinoctialis, Mont. Orn. Dict. Suppl. (1813, nec Linn.).
Ardea bubulcus, Audouin, Expl. somm. Pl. Ois. de l'Egypte, i. p. 298 (1825).
Ardea russata, Wagl. Syst. Av. *Ardea*, no. 12 (1827, partim).
Lepterodas ibis, Ehr. Symb. Phys. fol. *l* (1828).
Ardea verany, Roux, Orn. Prov. ii. p. 316 (1829).
Egretta russata (Wagl.), Swains. Classif. of B. ii. p. 354 (1837).
Erodius russatus (Wagl.), Macgillivray, Man. Brit. B. ii. p. 135 (1842).
Ardeola russata (Wagl.), C. L. Brehm, Vogelfang, p. 294 (1855).
Ardeola bubulcus (Aud.), C. L. Brehm. op. cit. p. 295 (1855).
Buphus russatus (Wagl.), Heugl. Syst. Uebers. Vög. N.O.-Afr. p. 59 (1856).
Buphus coromandelicus, Heugl. ut suprà (1856, nec Bodd.)
Bubulcus ibis, Bp. Consp. Gen. Av. ii. p. 125 (1857).
"*Bubulcus ruficristata*, Verr.," Bp. ut suprà (1857).
Herodias russata (Wagl.), Salvin, Ibis, 1859, p. 357.
Herodias bubulcus (Aud.), G. C. Taylor, Ibis, 1860, p. 313.
"*Ardea ruficristata*, Verr.," Roch & Newton, Ibis, 1863, p. 170.
Ardea coromanda, G. R. Gray, Cat. Brit. B. p. 147 (1863, nec Bodd.).
Buphus coromanda, E. C. Taylor, Ibis, 1867, p. 70 (nec Bodd.).
Ardea coromandra, Tristram, Ibis, 1868, p. 325 (nec Bodd.).

Héron garde-bœuf, French; *Garrapatosa*, *Purgabueyes*, Spanish; *Airone guarda-buoi*, Italian; *Abu-Qerdán*, Arabic; *Tair el bukkar*, Moorish.

Figuræ notabiles.

Fritsch, Vög. Eur. taf. 42. fig. 4; Gould, B. of Eur. pl. 278; id. B. of G. Brit. iv. pl. 24; Roux, Orn. Prov. ii. pl. 316.

♂ *ad. ptil. æst.* albus: pileo et nuchæ plumis elongatis filamentosis rufescenti-isabellinis: dorso superiore pallidè cervino, dorsi imi plumis valdè elongatis et gutture imo plumis minùs elongatis rufescenti-aurantiacis, filamentosis: rostro et pedibus flavis, loris et spatiis nudis anteocularibus viridi-flavis: iride flavâ.

Ad. ptil. hiem. omnino albus isabellino tinctus: pileo pallidè rufescenti-ochraceo: rostro et iride flavis, pedibus fuscis vel sordidè nigricantibus.

Adult Male in summer (Seville, May). Feathers on the crown and nape elongated, hair-like, rich reddish-buff in colour; fore part of the back pale buffy yellow; from the lower back a large bunch of hair-like bright rufous-buff plumes spring, and extend beyond the tail; and a similar but shorter bunch covers the lower throat; rest of the plumage pure white; iris, beak, and legs yellow; bare space in front of the eye greenish yellow. Total length about 17 inches, gape 2·8, wing 9·7, tail 3·9, tarsus 3·2, bare portion of the tibia 1·25.

Adult Female (Seville, May). Resembles the male; but the rufous buff plumes are much shorter, paler and yellower, and in general size the bird is smaller.

Adult in winter. Entire plumage uniform creamy white, except the crown, which is pale rufous buff; bill and iris yellow; legs dark brown or dull blackish grey.

Young (Madagascar). Crown semicrested, dull rufescent ochreous; rest of the plumage white, except that the back is tinged with pale buff; legs dull greenish yellow.

The present species inhabits Southern Europe and the continent of Africa generally; but it ranges only a short distance into Asia, being replaced in India, China, Japan, and the Malay archipelago by *Ardea coromanda* (Bodd.).

In Great Britain this species has been shot on three occasions: one, a female, was, according to Montagu (*l. c.*), shot late in October 1805, near Kingsbridge, Devon, where it had been seen for several days in the same field attending some cows; a second example, Mr. Stevenson says (B. of Norf. ii. p. 151), was shot at Martham, near Yarmouth, in 1827; and a third is recorded in the 'Zoologist' (1851, p. 3116) as having been procured in South Devon in April 1851.

It has not been obtained in Scandinavia, Northern Russia, North Germany, Holland, Belgium, or Northern France; but it is said to be an accidental straggler to the southern departments of the last country. In Portugal, according to Professor Barboza du Bocage, it is not uncommon. And Dr. E. Rey writes (J. f. O. 1872, p. 155) that there is a large tract of land near Lagos which is regularly more or less submerged at high water; at low tide it is numerously frequented by many of the Herons, amongst others by the present species, which was in great abundance, and was said by the natives to be resident there. In Spain it is common, and, to some extent, resident in suitable localities. Colonel Irby states (Orn. Str. Gibr. p. 185) that "the Buff-backed Heron is very common in low-lying districts in Andalucia, and some are resident; but they are very irregular in their movements, and chiefly noticed while passing during March and April, as they always attend cattle when in wet marshy ground. The Spanish herdsmen naturally object to have them molested, especially as there is a story of a sporting Briton from Gibraltar having shot one as it sat on a cow's back—a story which I am afraid is founded on fact, and only shows what the Englishman is capable of.

"The local names of this Heron all originate from its habit of attending cattle and freeing them from parasites—*Garrapatosa* from *garapata*, a tick or louse; *Purgabueyes*, cattle-cleaner or purifier.

"A male bird, which had been kept alive for about four years in the patio of the Fonda de Europa, at Seville, during the first week in April (his fifth spring, as far as I could ascertain) began to change the colour of the legs and the basal half of both mandibles to a pinkish red;

the irides also changed to beautiful rich pink colour, with a very slight golden ring round the black pupil. This change was quite completed before the bird had fully assumed the buff-coloured back, which is the mark of the breeding-dress."

Examples have been obtained in most of the provinces of Italy, especially in Liguria; and Dr. Giglioli states (Ibis, 1865, p. 60) that he met with two on the 30th April near Pisa. In Sicily it is of very rare occurrence; and Mr. A. B. Brooke says that it is a doubtful straggler to Sardinia. Mr. C. A. Wright observes (Ibis, 1864, p. 143) that there is a preserved skin of this bird in the Malta University Museum; and Schembri records the capture of two specimens in Malta. Lord Lilford remarks (Ibis, 1860, p. 346) that he saw a stuffed specimen at Corfu which was killed at Butrinto, and he believes that he saw two on the race-course in April 1857. Dr. Krüper informs me that it has not been observed in Greece of late years; but Temminck states that one was obtained at the mouth of the Danube, and one in the Crimea, and that it is said to visit Turkey and Dalmatia; and Professor von Nordmann speaks of it as being abundant on the Danube.

I find no information regarding its occurrence in Asia Minor; but Canon Tristram says that he saw it in large flocks in Palestine; and in Africa it is generally distributed in suitable localities down to the Cape of Good Hope. Captain Shelley writes (B. of Egypt, p. 268), "This species is very abundant in Egypt, especially in the Delta, where flocks may be daily seen feeding among cattle without the least fear of man. On the ground it is graceful, but looks awkward on first taking wing. It is a useful bird to the natives, as it causes great havoc among the locusts and other insects, in this respect replacing the Sacred Ibis, for which bird it is usually made to do duty with the tourist. In August it breeds in large flocks in the sont woods;" and Mr. Stafford Allen says (Ibis, 1863, p. 32) that "perhaps the most conspicuous bird that catches the eye of the traveller in Egypt is the Buff-backed Heron (*Herodias bubulcus*; *Ardea russata*, Yarr. & Gould; *Bubulcus ibis*, Bonaparte) in its winter plumage of pure white, which is to be met with in flocks of from four or five to thirty, distributed all over the country.

"These birds especially affect the society of cattle, and may be seen feeding about among the legs of the cows and buffaloes in the most fearless manner, like Starlings in a flock of sheep, frequently perching on the backs of the lazy animals in the same way. The Arab name 'Abou Gerdán' (father of flocks), the French 'l'Héron Garde-bœuf,' and the Latin specific appellation '*bubulcus*,' all have reference to this marked peculiarity.

"Contrary to the usual custom of the Herons and Egrets, most of which are piscivorous, the 'Buff-backed' does not feed upon fish, but upon the various kinds of insects, particularly grasshoppers, which are so abundant in the rank herbage produced by the peculiar system of irrigation in use amongst the Arabs. They are consequently seldom seen near the water's edge. About dusk they retire to the trees to roost; and though I have occasionally seen them in the date-palms, they generally choose the sycamore or wild fig-tree for that purpose.

"It is frequently asserted that the Arabs consider this bird as *sacred*, and that killing one is looked upon as a serious offence; but I believe this is not the case, at least not in a *religious* sense. I have sometimes, on having shot one for a specimen, been reproached for so doing, much in the way that we should speak to any one who killed a Robin; and I think that this

more correctly represents the feeling on the point, although it is a hopeless task to make an Arab understand any thing of an abstract nature.

"During the winter the plumage of the Buff-backed Heron is of a creamy-white colour, with a small reddish-buff patch on the top of the head, the legs and feet being black. About the commencement of April longer feathers, of a pale buff, begin to appear on the back, neck, and crest (the rest of the plumage remaining *in statu quo*).

"These continue to grow in length and deepen in colour until the end of May, by which time the summer dress is complete. At the same time the legs and feet change to a pale yellowish olive. The bill at all times is of an ochraceous yellow; and the irides vary in different specimens (probably according to age) from pale to bright yellow. The lore is greenish. The male is generally rather larger than the female, and the long feathers are a little more developed."

In Algeria the Buff-backed Heron is resident and numerous. Mr. Salvin, who first met with it near Bizerta, and afterwards at Zana, says that it is very local, though abundant in the localities it inhabits. Mr. J. H. Gurney, jun., only once saw it in the Sahara; but at Oued el Alleg he noticed upwards of forty feeding amongst the cattle; Mr. A. von Homeyer observed many on Lake Halloula, where he was told that they breed in colonies; and Mr. Taczanowski saw one near Lake Fezzara in December. Around Tangier, Favier remarks, "it is the commonest of the Herons, and keeps in small flocks, always following herds of cattle, often sitting on their backs, and chiefly feeding on insects. A small proportion remain during the breeding-season; but the majority pass northwards in February, March, and April, returning late in the year." It is said to have occurred in Madeira, and is distributed in Africa down to the Cape colony. There are examples in the Leyden Museum from Senegal and the Gold Coast; M. Jules Verreaux states that it occurs on the Orange River; and Mr. Andersson says (B. of Damara L. p. 288) that it is exceedingly numerous in Ondonga. Mr. E. L. Layard (B. of S. Afr. p. 307) writes that two in non-breeding dress have been received from Mr. Arnot, and there were several examples in a collection made by Mr. Chapmen on the Zambesi. Mr. Ayres obtained it both in breeding- and non-breeding-dress in Natal, and also met with it in the Transvaal; and Mr. Barratt writes (Ibis, 1876, p. 211):—"I shot a fine male of this species in a flock which were hopping about under some oxen, from which they were picking off the ticks. I have obtained them close to Lydenburg and Potchefstroom, and I have seen them near Pretoria, Rustenberg, and near the Vaal river. They congregate in flocks, standing on one leg basking in the sun." In Madagascar the Buff-backed Heron appears to be common, and is probably resident. Mr. S. Roch obtained one at Antananarivo in October, and he saw several at Farafata; and, speaking of it again under the name of *Ardea ruficristata*, he adds that it is "very common in the neighbourhood of Tamatave. We almost daily observed flocks of white Egrets on our journey up the country, even as far as the Mangouron, more than one hundred miles from the coast; they were in constant attendance on herds of cattle, from whose skins they would dexterously pick off the ticks and *carapats*. I also observed that, whenever the natives burnt brushwood or grass-land, these birds collected in numbers in the very smoke, to catch any insects that were thus driven from their resting-places."

Mr. Edward Newton, who also met with this Heron in Madagascar, writes (Ibis, 1863, p. 456) as follows:—"These birds, I was told, never breed elsewhere than on the small coral

islands, covered with thick brushwood, which occur every here and there on the reef along the coast. They certainly roost there, as towards sunset, and even after, parties of from two to twenty individuals are to be seen wending their way out to sea in the direction of one or other of these islands. Fong Island to the southward of Hivondrona, Prune Island to the northward of Tamatave, and a small one near Fenerive seem to be the favourite spots resorted to by them. The first-named must be at least eight or ten miles from the coast. I never had an opportunity of visiting any of them—no easy task, by the way, on account of the heavy swell, which makes landing dangerous, and sometimes impossible. I think they were breeding in September."

Captain Rowland M. Sperling found the Buff-backed Heron plentiful at Zanzibar and Mozambique, and adds that when they were about 150 miles from Madagascar many of these birds, in breeding-plumage, flew on board.

In Asia the present species extends only a short distance, being replaced in India, China, Japan, and the Malay archipelago by a closely allied species, *Ardea coromanda* (*Cancroma coromanda*, Bodd., Tabl. Pl. Enl. p. 54, 1873), which differs in being rather larger in size, the rufous portion of the breeding-dress being richer in colour, and the bare portion of the tibia being considerably larger. Where the two forms meet it is impossible to say; but, according to De Filippi, *Ardea bubulcus* is found in countless numbers on the Murdab, an inlet of the Caspian, close to Enzeli.

In many respects the Buff-backed Heron differs not a little from its allies; for although it is found in marshy and wet localities, it is by no means shy or fearful of man, but, evincing a partiality for inhabited places, it frequents pastures where cattle are grazing, and follows the plough in flocks, in order to feed on the insects which infest the cattle and those which are turned up by the husbandman. In the dry steppes it is often seen in vast flocks in places where the locusts are found, and destroys vast numbers of those noxious insects. In the far interior of Africa the Buff-backed Heron follows the herds of wild buffaloes and elephants, and may be seen perched on their backs, as it often is in more civilized regions on the backs of the tame cattle; and being a conspicuous object on account of its white plumage, it not unfrequently betrays to the hunter the position of the wild animals with which it consorts. In its flight and general movements this bird differs but little from its allies; and, like them, it is seldom seen except in larger or smaller flocks, being eminently gregarious in its habits. It may possibly feed on fishes; but if so, it is in exceptional cases, and not as a rule; for its food consists almost entirely of insects—to a large extent of the various parasitic species, butterflies, bees, beetles of different kinds; and it is said also to devour frogs, lizards, and small mammals.

The call-note or voice of this Heron is described by travellers who have met with it as resembling the bleating of a sheep; but it is rather more hollow and deeper in tone.

The Buff-backed Heron breeds in colonies often consisting of thirty or more pairs; and the nests are placed on trees, either near the trunk on the larger branches, or on the outer forks of the upper boughs. Von Heuglin describes the nest as constructed of dry sticks and twigs, tolerably large, but flat, and not very high; and the number of eggs varies from two to four. Specimens in my collection from North Africa are uniform pale greenish blue in colour, and vary in size from $1\frac{27}{40}$ by $1\frac{11}{40}$ to $1\frac{37}{40}$ by $1\frac{13}{40}$ inch.

In North-east Africa it breeds about the time when the Nile overflows its banks; and Von

Heuglin remarks that it does not assume the nuptial dress until May or June; but Mr. Stafford Allen says that the long nuptial plumes begin to appear in April, though the complete breeding-plumage is not attained until May.

Mr. E. C. Taylor, speaking of its habits as observed by him in Egypt, describes it (Ibis, 1859, p. 50) as "very tame and familiar. It does not frequent water, or marshy ground, like most of its congeners, but especially affects the society of cattle; I have often seen it standing on the backs of buffaloes and cows. From this propensity to fraternize with cattle, it is called 'Cow-bird' by the English." And Mr. Ayres, writing from Natal, says (Ibis, 1863, p. 330) that "these Herons are gregarious in their habits, roosting by night amongst the branches of trees which overhang the small lakes that are plentiful in that part of the country. They appear to feed entirely on ticks (*Acari*), which they pick from the cattle as they are feeding, walking alongside of them and every now and then taking one off. They are wary birds, like most of the Herons, and not easy of approach. The farmers in the neighbourhood have also, of course, great objection to such useful birds being shot."

The synonymy of this Heron is, as I have found to be the case with that of many of its allies, by no means easy of elucidation. Many recent authors consider that it should be generically separated from its allies; but in this view I cannot concur. Nor can I agree that it should bear the specific name of *ibis*, for the following reasons. Hasselquist's *Ardea ibis* is certainly more probably the present species than the Sacred Ibis, with which both he and Linnæus confused it; but his name dates prior to 1766. In Linnæus's edition of Hasselquist's journey, which bears date 1766 (*l. c.*), he refers back to his tenth edition of the 'Systema Naturæ' (p. 144. no. 18), in which the bird is described as follows:—"*Ardea ibis* tota alba, pedibus atris, unguibus arcuatis maximis;" but in the twelfth edition Linnæus includes this as a synonym of his *Tantalus ibis*, which is certainly the Sacred Ibis; and for that reason this name must be discarded. The next name in order of date is that of *Ardea lucida*, Rafinesque; but here also the description is not sufficiently clear to identify his bird with the present species. His description (*l. c.*) is:—"Tutta bianca lucente, con ciuffetto, rostro e piedi gialli, spazio nudo fra il rostro e l'occhio bigio." Under these circumstances I think that the proper name to be used is *Ardea bubulcus*, Audouin, respecting which there can be no doubt; for Montagu, who figured and described the Buff-backed Heron in 1813 (*l. c.*), erroneously made use of the name *Ardea æquinoctialis*, which had already been preoccupied by Linnæus (Syst. Nat. i. p. 241) in 1776 for an American species.

The specimen figured, on the same Plate with the Squacco Heron, is an adult male from Spain, in full breeding-dress, and is in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂, *b*, ♀. Coto del Rey, Seville, Spain, May 1869 (*Lord Lilford*). *c*, ♂. Madagascar 1868 (*Pollen and Van Dam*).

E Mus. Brit. Reg.

a, *b*, *c*. Egypt. *d*. Athens. *e*. Gambia. *f*. South Africa. *g*. Madagascar.

ARDEA RALLOIDES.

(SQUACCO HERON.)

Ardea botaurus minor, Briss. Orn. v. p. 452 (1760).
Ardea cancrofagus, Briss. tom. cit. p. 466 (1760).
Ardea cancrofagus rufus nævius, Briss. tom. cit. p. 471 (1760).
Ardea cancrofagus luteus, Briss. tom. cit. p. 472 (1760).
Ardea ralloides, Scop. Ann. i. Hist. Nat. p. 88. no. 121 (1769).
Ardea castanea, S. G. Gmel. Reise Russl. i. p. 165 (1770).
Ardea marsigli, Lepechin, Nov. Comm. Petrop. xiv. p. 502 (1770).
Ardea pumila, Lepechin, ut suprà (1770).
Ardea comata, Pall. Reise, ii. p. 715 (1773).
Le Crabier caiot, Buff. Hist. Nat. Ois. vii. p. 389 (1780).
Le Crabier marron, Buff. tom. cit. p. 390 (1780).
Le Crabier de Mahon, Buff. tom. cit. p. 393 (1780).
Le Petit Butor, Buff. tom. cit. p. 423 (1780).
Le Petit Butor du Sénégal, Buff. tom. cit. p. 426 (1780).
Ardea squaiotta, Gmel. Syst. Nat. i. p. 634 (1788).
Ardea erythropus, Gmel. ut suprà (1788).
Ardea senegalensis, Gmel. tom. cit. p. 645 (1788).
Ardea audax, Lapeyrouse, Neue schwed. Abh. iii. p. 106 (1794).
Ardea botaurulus, Schrank, Fauna Boica, i. p. 221 (1798).
Ardea deaurata, Merr. in Ersch & Grub. Encycl. v. p. 173 (1820).
Ardeola ralloides (Scop.), Boie, Isis, 1822, p. 559.
Nycticorax ralloides (Scop.), Ehr. Symb. Phys. Aves, fol. *m* (1828).
Cancrophagus, Kaup (*Ardea ralloides* et *minuta*), Natürl. Syst. p. 42 (1829).
Buphus castaneus (Gmel.), C. L. Brehm, Vög. Deutschl. p. 589 (1831).
Buphus ralloides (Scop.), C. L. Brehm, ut suprà (1831).
Buphus illyricus, C. L. Brehm, op. cit. p. 590 (1831).
Buphus comatus (Pall.), C. L. Brehm, op. cit. p. 588 (1831).
Egretta comata (Pall.), Swains. Classif. of B. ii. p. 354 (1837).
Botaurus comatus (Pall.), Macg. Man. Brit. B. ii. p. 125 (1842).
? *Buphus pseudoralloides*, C. L. Brehm, Vogelfang, p. 295 (1855).
Buphus comata (Pall.), Bp. Consp. Gen. Av. ii. p. 126 (1857).
Ardea griseo-alba, Bosc, Act. Soc. Hist. Nat. Paris, i. no. 59, 1792, fide Reich. J. f. O. 1877, p. 256.

Héron crabier, French; *Garza canaria*, Spanish; *Sgarza-ciuffetto*, Italian; *Agrott-isfar*, Maltese; *Aishus*, Moorish; *Schopfreiher*, *Rallenreiher*, German; *Rareiger*, Dutch; *Topheire*, Danish.

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Figuræ notabiles.

D'Aubenton, Pl. Enl. 315, 348; Werner, Atlas, *Coureurs*, pl. 28; Kjærb. Orn. Dan. taf. 55; Fritsch, Vög. Eur. taf. 40. figs. 3, 5; Naumann, Vög. Deutschl. taf. 224; Gould, B. of Eur. pl. 275; id. B. of G. Brit. iv. pl. 25; Schlegel, Vog. Nederl. pl. 192.

Ad. capite et collo flavido-ochraceis, pilei et nuchæ plumis elongatis, lanceolatis et nigro marginatis: dorsi plumis elongatis filamentosis rufescenti-ochraceis: alis et caudâ albis: mento albo: gutture et pectore flavo-ochraceis, plumis elongatis filamentosis: corpore reliquo subtùs albo: rostro ad basin plumbeo-cæruleo, versus apicem nigro: regione oculari viridi: iride flavâ: pedibus flavo-viridibus.

Adult Male in summer (Seville, June). Crown, nape, and sides of the head pale creamy yellow, the feathers on the crown and nape much elongated and pointed, a few of the longest quite white, and all margined with black; dorsal feathers much elongated, filamentous, the upper portion coppery ochreous, and becoming creamy buff on the lower part; wings and tail pure white; chin and upper throat white; lower throat and breast pale creamy yellow, the feathers like those on the back, hairy in texture: rest of the underparts pure white; bare space round the eye greenish; bill pale lead-blue at the base, and blackish towards the point; iris rich yellow; legs greenish yellow. Total length about 18·5 inches, culmen 2·62, wing 8·6, tail 3·5, tarsus 2·5.

Adult Female (Seville). Differs from the male merely in having the nuchal feathers rather shorter.

Young Female (Turkey, 19th May). Differs from the adult merely in having the dorsal feathers (except at the sides) coppery brown, much darker than in the adult, the nuchal feathers shorter and yellower, the lower throat striped with blackish, and the wings marked with yellowish buff; bill dull greenish yellow, brownish along the ridge; iris whitish yellow; legs yellowish green.

Obs. The fully adult dress is not assumed until the third year. In the second year the crest is rather fuller than previously, but not nearly so long as when adult, and the back is dull coppery brown, the feathers being still rather short.

This small Heron inhabits Southern Europe and Africa, ranging eastward to the Caspian, and but rarely straggling into Central and Northern Europe. It has, however, been met with in different parts of Great Britain on many occasions. Mr. Harting (Handb. Brit. B. p. 150) cites twenty-one instances of its occurrence in the Isle of Wight, Cornwall, Devonshire, Dorsetshire, Shropshire, Hants, Wilts, Somersetshire, Norfolk, Suffolk, and Cumberland; Mr. Cordeaux states that one was killed in Lincolnshire, at Fillingham, near Gainsborough; and Martin (Naturalist, 1853, p. 61) records the occurrence of one on the Glasgow canal, near Stockton, on the 9th October 1852. In a letter lately received from Mr. J. Gatcombe, this gentleman writes, "I may mention that a short time ago I examined a very fine and nearly adult Squacco Heron in a collection at Blatchford House, the seat of Lord Blatchford, in Devon, which was killed in June 1840 by the side of a large pond adjoining the house. This specimen has never been recorded, except in a very short notice in the 'Naturalist' for 1850; and as this Heron is now so rarely met with in Great Britain, I think that every capture should be noticed." According to Thompson it has once occurred in Ireland, a specimen having been killed in Killeagh bog, a few miles from Youghal, on the 26th May 1849.

It has not been observed in Norway, Sweden, or North Russia; Mr. Taczanowski says that it is very rare in Poland; Naumann states that it is of very rare occurrence in Central Germany, but is often to be met with in Silesia. One was shot in Anhalt many years ago. Pastor Boeck obtained it once in Prussia, in June; and Von Preen says that one was shot near Doberan, in Mecklenburg, on the 25th of May 1844. According to Professor Reinhardt it has once been shot in Holstein and once in Jutland. In Holland, Professor Schlegel remarks, it was once procured on Schollevaars-eiland, near Rotterdam. Examples have been obtained near Tournay; but it is of very rare occurrence in Belgium, as also in the northern provinces of France. It has, however, been occasionally captured in the marshes of Artois and in many parts of Central France, and becomes tolerably common in the marshes at the mouth of the Rhône. It is included in Professor Barboza du Bocage's list of the birds of Portugal; and it is fairly abundant in Southern Spain, where, Colonel Irby says, "it is entirely migratory, arriving during the month of April. They are common in the marisma of the Guadalquivir; but I never observed any near Gibraltar, nor did I ever see them following cattle, like *Ardeola russata*. They nest late in the season; but I regret to be unable to give any personal information as to their breeding-habits."

In Savoy it appears on passage singly or in pairs—birds of the year being generally seen in the autumn, and adults on the spring migration. In Italy it is tolerably abundant, especially on passage in May, and in Sicily and Sardinia both in the spring and autumn. Mr. C. Bygrave Wharton remarks (Ibis, 1876, p. 27) that he saw one in the flesh which had been shot at Biguglia, Corsica, on the 15th May; and Mr. C. A. Wright states (Ibis, 1864, p. 143) that he most frequently met with it in Malta in May, and shot four or five examples at different times on Fort-Manoel Island in that month. It has also been observed in June, and occurs on the autumn migration in September.

In Southern Germany the Squacco Heron becomes tolerably common; and Dr. Fritsch states (J. f. O. 1871, p. 391) that "during the last few years it has been almost regularly observed and obtained. Ostrdal obtained it in 1852; and a gamekeeper called Sikesch shot one near Kost in 1862. In September 1864 Ostrdal observed fifteen individuals at the pond of Bohdanec, near Pardubic, of which he killed five. The same year some were obtained near Kel, not far from the ford of Stefan,—also at the 'Skupice,' near Podebrad, in the beginning of May 1866 (*Hoffmann*), Brandeis a. d. Adler, 21st of May 1867 (*Hromadko*); and a flock was seen in 1869 near Kestran, not far from Protivin. I have not the least doubt that these little Herons would nest here in the lowlands of the Elbe if left in peace." It is common in Southern Hungary along the Turkish frontier up into Dalmatia and Austria; and in the large marshes of the Lower Danube it breeds in company with the Little Egret, arriving about the same time, and is found in Greece, but does not appear to breed there. Dr. Krüper says that it arrives in Attica late in March, and remains until May. In the Cyclades it is a migrant. According to Lord Lilford (Ibis, 1860, p. 346), this Heron "arrives in great numbers in Epirus in March, and, I believe, breeds in the marshes of the interior. Very abundant on the Lake of Scutari in August 1857. I found this species the most difficult of approach of any of the *Ardeidæ*;" and he further informs me that he "met with it in Suda bay, in Crete, and also in Cyprus, in the spring of 1875."

In Southern Russia the Squacco Heron is said to be rare on the coasts of the Black Sea;

and it is found in Asia Minor, but whether numerously or otherwise I cannot say. Canon Tristram met with it in flocks in Palestine, where, however, it was less common than the Buff-backed Heron. In Africa it is very widely distributed; Von Heuglin says that there were few places he visited in North Africa where he did not meet with it. It appears on the Nile early, in July, August, and September, and is seen there, in Eastern Kordofan, on the White and Blue Nile, and in Abyssinia; but immature birds were chiefly met with. Adult birds were numerous in Nubia in June and July; he saw several flocks in September on the Danakil coast; and examples in full breeding-dress were seen early in April in Lower Egypt and the Fayoom, from which it appears that it breeds there. Captain Shelley says (B. of Egypt, p. 269), "it is distributed in small numbers throughout Egypt and Nubia, where it is a resident. I have shot it on the banks of the river near Dendera in May, and saw it in flocks at Damietta and in the Fayoom in February." Mr. Blanford met with it in Abyssinia, and shot a specimen at Antalo. It is resident and generally distributed in Algeria. Mr. Salvin found it common in the marshes of Zana, but singly, or two or three together, rather than in flocks like the Buff-backed Herons; and Canon Tristram says that vast flocks resort to the lakes of Tuggurt, a portion only of which, he was informed, remain there to breed.

According to Favier (*fide* Colonel Irby, Orn. Str. Gibr. p. 186), "This species is nearly as common around Tangier as *Ardeola russata*, occurring in small flocks during migration. Some remain in the country to breed, nesting on the ground among sedges, laying in May and June five eggs, which are more oval in shape than those of *Ardea purpurea*, but of the same colour;" and Colonel Irby himself found this Heron in great numbers about the swamps of Ras-Doura towards the end of April, where they were by far the most common species of *Ardeidæ*.

Dr. Bolle says that he saw examples of this Heron in the Léon collection, which had been obtained in the Canaries; and on the continent of Africa the Squacco Heron has been met with as far as Natal and the Transvaal. Dr. Anton Reichenow found it breeding at the Gold Coast; and Andersson (B. of Damara L. p. 288) says that this Heron is "found in Damara and Great Namaqua Land throughout the year, but is more numerous in those countries during the rainy season than at other times. It is very abundant in the Lake-regions, and on the rivers Botletlé, Teoughe, and Okavango. It feeds on insects, frogs, &c." It has been obtained in Natal and the Transvaal, being rare in the former colony; but, according to Ayres, it is numerous in the neighbourhood of Potchefstroom, in the Transvaal. Mr. T. E. Buckley shot it in the Matabili country; and Dr. Kirk met with it commonly on the Zambesi. Mr. E. Newton procured it in Madagascar; Dickerson records it from Joanna; and Dr. Kirk says that it was common in the marshes on the sea-coast near Pomone.

The Squacco Heron does not penetrate far into Asia. As above stated, it is found on the shores of the Caspian; and Mr. Blanford believes that it occurs in Persia, though he has no evidence of its presence there.

In habits the Squacco Heron is said to differ a good deal from its congeners. Though in general appearance it reminds one not a little of the Bitterns, it really has in its habits more affinity with the Egrets. When resting it holds its body erect, the neck drawn in so that it looks quite short; but directly its suspicions are aroused it erects its head, and will generally seek refuge in flight. Unless subjected to persecution, however, it is by no means a shy bird,

and will frequently admit of a close approach, though in some localities it is described as being extremely shy, having doubtless been much persecuted. It walks with greater ease and grace than most of its allies; but, like them, when intent on catching some unlucky frog, it will move along in the peculiar slow manner so characteristic of the Herons and Bitterns. It flies with tolerable ease, and rather swiftly, but softly and without noise, the legs being stretched out behind and the head drawn in, but not so much so as in many of the other species. It is said to affect the company of cattle, like its ally *Ardea bubulcus*, being especially fond of swine; and Naumann relates that he often shot specimens of the Squacco Heron in places frequented by large herds of pigs, as there these birds were quite tame and easy of approach, and that when flushed in a neighbouring swamp he has seen this Heron fly to the swine as if for refuge. The call-note of the Squacco Heron is a harsh call like the syllable *charr*; but it is not loud, and can only be heard when the bird is quite close. When flushed it will sometimes utter its cry once or twice, but it usually flies off in silence. It feeds on fish, frogs, and aquatic insects of various kinds, worms, and small shellfish, and seeks its food by day and never during the night, though it may be found fishing quite late in the evening.

It breeds in marshy localities in Southern Europe and in Africa, nesting on the ground amongst the aquatic herbage, and lays four or five eggs, which are uniform pale greenish blue in colour, much darker than those of the Buff-backed Heron, and about the same tinge as those of the Purple Heron. Eggs in my collection, taken on the Theiss from the 20th May to the 2nd June, vary in size from $1\frac{19}{40}$ by $1\frac{8}{40}$ to $1\frac{24}{40}$ by $1\frac{7}{40}$ inch.

The specimen figured, on the same Plate with the Buff-backed Heron, is an adult male, in full summer dress, from Spain, in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂, *b*, ♀. Seville, June 1869 (*Lord Lilford*). *c*, ♀ *jun.* Khathane, Turkey, May 19th, 1869 (*Robson*).

E Mus. C. A. Wright.

a, *b*, ♀. Malta, May 26th, 1871. *c*, ♀. Malta, April 1871 (*C. A. W.*).

Genus ARDETTA.

Ardea apud Brisson, Orn. v. p. 497 (1760).
Botaurus apud Boie, Isis, 1822, p. 559.
Cancrophagus apud Kaup, Natürl. Syst. p. 42 (1829).
Butor apud Swainson, Classif. of B. ii. p. 354 (1837).
Ardeola apud Bonaparte, Comp. List, p. 48 (1838).
Ardetta, G. R. Gray, List of Gen. of B. Appendix, p. 13 (1842).

The genus *Ardetta* is represented in the Palæarctic, Ethiopian, Oriental, Australian, Nearctic, and Neotropical Regions, only one species being found in the Western Palæarctic Region.

In many respects these birds resemble the Bitterns, so much so that some authors have included them in the genus *Botaurus*; but they are clearly deserving of generic separation. They frequent marshes, rivers, and sheets of water which are well covered with aquatic vegetation, are shy and secretive in their habits, and hide pertinaciously amongst the dense thickets of reeds and bushes. They take wing unwillingly, but fly swiftly and with ease. They feed on small fish, insects, frogs, &c., which they obtain in the wet localities they inhabit. Their cry is more like that of the Bittern than the call-note of the Herons. They construct a rather heavy nest of twigs and aquatic plants, which they place amongst the reeds above shallow water; and they deposit several bluish-white eggs.

Ardetta minuta, the type of the genus, has the bill longer than the head, straight, tapering to a sharp point; gape-line straight; nostrils linear; space in front of the eye bare; wings moderately long, broad and full, the first two quills nearly equal, the third slightly shorter; tail short, slightly rounded; legs rather short, the tibia feathered to the joint, tarsus anteriorly scutellate; toes long, rather slender; claws long, slightly curved, acute, that on the middle toe serrated on the inner edge; plumage soft and full, the head without crest, and the dorsal plumage not elongated as in *Ardea*.



J.G.& C. Lemare lith.

Hanhart imp

LITTLE BITTERN.

ARDEOLA MINUTA

ARDETTA MINUTA.

(LITTLE BITTERN.)

The Little Brown Bittern, Edw. Gleanings, part ii. pp. 135, 275.
Ardea ardeola, Briss. Orn. v. p. 497, pl. xl. fig. 1 (1760).
Ardea ardeola nævia, Briss. Orn. v. p. 500, pl. xl. fig. 2 (1760).
Ardea minuta, Linn. Syst. Nat. i. p. 240 (1766).
Le Blongios, Buff. Hist. Nat. Ois. vii. p. 395 (1780).
?*Ardea danubialis*, Gmel. Syst. Nat. i. p. 637 (1788).
?*Ardea soloniensis*, Gmel. Syst. Nat. i. p. 637 (1788).
Botaurus minuta (L.), Boie, Isis, 1822, p. 559.
Cancrophagus, Kaup (*Ardea ralloides* et *minuta*), Natürl. Syst. p. 42 (1829).
Botaurus pusillus, C. L. Brehm, Vög. Deutschl. p. 598 (1831).
Butor minutus (L.), Swains. Classif. of Birds, ii. p. 354 (1837).
Ardeola minuta (L.), Bp. Comp. List, p. 48 (1838).
Ardetta minuta (L.), G. R. Gray, List of Gen. of B. Appendix, p. 13 (1842).
Ardeola pusilla, L. Brehm, Naumannia, 1855, p. 290.

Héron blongios, French; *Garça pequena*, Portuguese; *Cangrejerita*, Spanish; *Tarabusino*, Italian; *Blongios*, Maltese; *kleiner Rohrdommel*, *Zwergrohrdommel*, German; *Woudaapje* Dutch; *Dværghejre*, *Dværg-rördrum*, Danish; *Dverg Rördrum*, Swedish.

Figuræ notabiles.

Werner, Atlas, *Coureurs*, pl. 29; Kjærb. Orn. Dan. taf. 32, Suppl. taf. 14; Frisch, Vög. Deutschl. taf. 207; Fritsch, Vög. Eur. taf. 37. figs. 3, 4, 5; Naumann, Vög. Deutschl. taf. 227; Sundevall, Svensk. Fogl. pl. 76. figs. 1, 2; Gould, B. of Eur. pl. 282; id. B. of G. Brit. iv. pl. 29; Schlegel, Vog. Nederl. pls. 196, 197; Bettoni, Ucc. Lomb. pl. 3.

♂ *ad.* pileo, dorso, caudâ et scapularibus nigris viridi nitentibus, capitis lateribus et collo cinereis vinaceo tinctis: remigibus nigris purpureo nitentibus: tectricibus alarum majoribus cæruleo-cinereis vix ochraceo tinctis, mediis et minoribus ochraceis: corpore subtùs ochraceo, juguli plumis elongatis, rostro et pedibus viridi-flavis: iride et loris nudis flavis.

♀ *ad.* pileo nigro vix fusco tincto, capitis lateribus cum collo lateraliter et postico rufescentibus: dorso et scapularibus saturatè castaneo-fuscis, plumis ochraceo marginatis: caudâ nigrâ viridi nitente: remigibus saturatè fuscis: tectricibus alarum ochraceis, plagâ magnâ castaneâ notatis: mento albo, lineâ centrali ochraceâ notato: corpore subtùs ochraceo, albido striato.

Adult Male (Malta, May). Crown, back, tail, and scapulars black glossed with bottle-green; sides of the head, neck, and hind neck dull French grey tinged with vinous: quills black with a purplish tinge; larger wing-coverts dove-blue tinged with ochreous, median and lesser coverts warm ochreous; under-

parts generally ochreous, the lower neck-feathers much elongated, forming a pectoral tuft or bunch, the feathers which are covered by this tuft being blackish brown bordered with ochreous; bill and legs greenish yellow; iris and bare space round the eye yellow. Total length about 12 inches, culmen 2·1, wing 5·83, tail 2·4, tarsus 1·72, bare portion of tibia very small, indeed scarcely perceptible.

Adult Female (Italy). Crown black but with a brown tinge, slightly glossed, sides of the head and neck and hind neck rufous; back and scapulars deep chestnut-brown, the feathers margined with ochreous; tail black glossed with bottle-green; quills dark dull brown; wing-coverts deep ochreous, the shoulder with a patch of chestnut-red; chin white with a central ochreous stripe; underparts as in the male, but streaked with white. Culmen 1·95, wing 5·7, tail 1·9, tarsus 1·75.

Young Male. Somewhat resembles the female, but has the upper parts more varied with buff, and the neck and underparts generally are clearly striped with deep brown, and are of a deeper ochreous tinge.

Young in down (*fide* Stölker). Covered with soft ochreous yellowish down, which allows the pink of the flesh to show through here and there; on the crown and back the down is longer than elsewhere; bill, legs, and the bare portions about the eye, except a dark line from the gape to the eye, yellowish green; iris dark brownish.

Throughout the whole of Temperate Europe the Little Bittern is not uncommon in the summer. It has, however, occurred in Sweden, but is in general a rare straggler to the northern portions of Europe. In the autumn it passes southward; and in the winter season it is found tolerably far into Africa. It appears to range only into Western Asia, being replaced in Eastern Asia by *Ardetta sinensis.*

In Great Britain it is a somewhat rare summer visitant, but has been recorded from many parts of England, Scotland, and Ireland, though less frequently from the two latter countries. Mr. Stevenson enumerates about twenty instances of its capture in the "Broad" districts of Norfolk and Suffolk, of fourteen of which he has the exact dates, nine having been killed in May, June, and July, four in December and February, and one in September. As may be supposed from the nature of the country, it has been observed more frequently in these two counties than elsewhere in England; but it has been recorded from Devonshire, Dorsetshire, Cornwall, Herefordshire, Hampshire, Berkshire, Middlesex, Yorkshire, Northumberland, &c. Professor Ansted includes it as occurring in Guernsey; but there is no specimen in the Museum. Mr. Cecil Smith, however, records the capture of one there in November 1876. Referring to its occurrence in Dorsetshire, Mr. Mansel-Pleydell says that one was killed at Preston, near Weymouth, in 1840, and three which had been shot on the Wareham river passed through Mr. Hart's hands in 1866. Mr. Cordeaux (B. Humb. Distr. p. 104) states that one was shot near Gainsborough in the spring of 1870, an immature female was killed on the Mere, near Scarborough, in August 1863; and in Mr. Boulton's collection there was an adult male obtained in Lincolnshire. According to Hancock, "it is an extremely rare casual visitant to Northumberland and Durham. A mature male was shot at Blaydon, near Newcastle, on the 12th of May 1810; this specimen is now in the Newcastle Museum, and is the individual figured by Bewick. Another example was killed in April 1859 in the garden at Denton Hall, three miles west of Newcastle, and is in the possession of Mr. Hoyle. A third individual was shot at Benridge, Woolsington, Northumberland, in 1866, and is in the collection of Mr. C. M. Adamson: this specimen is a

mature male." It is said to have bred in England; but there appears to be no proof that this is the case, as I have been unable to gather any evidence to show that a nest has really been taken. In Scotland it has been but rarely met with; and the occurrences recorded by Mr. Robert Gray (B. of W. of Scotl. p. 278) are:—one at Aberdeen 21st October 1866; one at the junction of the Don and Ury, below Keith Hall, on the 28th May 1868; one near Fintry House 23rd September 1868; and one at Luffness, East Lothian, 23rd September 1867. Dr. Edmonston noticed it in Shetland; and according to Messrs. Baikie and Heddle, one was shot by Mr. Strang on Sanday, Orkney, in 1806. Mr. Thompson (B. of Ireland, ii. p. 159) writes as follows:—"The first individual of this species killed in Ireland that came under my observation (as recorded in the 'Proceedings' of the Zoological Society for 1834, p. 30) was an immature bird in the plumage of the young after the first moult, according to Mr. Selby's description. It was shot in the county of Armagh in November 1830, and sent to my friend, William Sinclair, Esq., of Belfast, who preserved it for his collection. An intelligent sportsman, on seeing this specimen, assured us that a bird which he had observed in spring some years before at the bog-meadows, near Belfast, was of the same species. He described it as rising from the ground almost perpendicularly when sprung, and descending again in a similar manner. Another gentleman, who saw the specimen in 1833, at once recognized it as identical in species with a bird which he had shot a year or two previously in the county of Kerry. Mr. T. W. Warren, of Dublin, possesses an *Ardea minuta*, which was shot about the year 1833 in the county of Longford. In 1837 that gentleman told me of his having, some years before, seen one in a fresh state which was shot at Merrion, near that city, and preserved for Sir William Homan. Mr. Glennon states that the Little Bittern has been more than once killed in the marsh at Sandymount, near Dublin. Dr. Harvey, of Cork, informs us that an adult male bird in his collection was shot in the summer of 1842, at Woodside, by Mr. Robert Parker, and that the Rev. Mr. Stopford had also killed one in that county. About the 1st of May 1849, one was shot by an officer of the 9th Regiment in a bog between Newry and Dundalk." The Little Bittern has not occurred in Greenland; but a specimen was sent to the Copenhagen Museum some years ago from Iceland, where it was found dead on the shore. Mr. H. C. Müller records the capture of one on Stromœ, in the Færoes, in 1834; and it has also been met with in Scandinavia. Nilsson says that it has been twice obtained in Sweden—once many years back at Westerås; and the second was shot in Dagstorps moss, in Skåne, about the middle of October 1849. It has not been observed in Finland; but Mr. Sabanäeff informs me that it breeds in the Moscow Government, as also in Smolensk, and possibly in Jaroslaf. In the Riazan Government it is rarer; but, according to Bogdanoff, it is found as far as the Spask district, in the Kazan Government. Mr. Taczanowski speaks of it as being common in Poland in the summer. In North Germany it is tolerably common. According to Gloger it occurs abundantly in Silesia; and Borggreve adds that it certainly breeds on the Lower and Central Oder and on the Warte-Bruch. Boeck says that it nests in Prussia; and it is said to breed commonly in Posen, in Anhalt, Mecklenburg, and but rarely in Oldenburg, though commonly on the Rhine and the Moselle. Borggreve once saw a specimen on the Sieg in winter. Referring to its presence in Mark Brandenburg, Mr. Herman Schalow writes (J. f. O. 1876, p. 17) that it "breeds in the district. In some years it is tolerable common, in others rarer. During the last years we observed it every year at the lake of Tegel, and in the vicinity of

Marwitz and Velten. About ten years ago it bred regularly near Weissensee. Altum mentions it as breeding near Neustadt, Ew.; Schulz received it from Cöpenick. According to Borggreve it may possibly breed in the Lower and Middle Oderbruch. Our opinion is that the Little Bittern has been more abundant in the Mark during the last few years. Migrant; end of April, end of October."

It has been obtained on several occasions in Denmark. According to Collin one is recorded by Teilmann as having been shot at Nörholm, in Southern Jutland; there are two young birds from Holstein in the Copenhagen Museum; Mr. Gad shot one in his garden at Sæby; and it has been recorded from Söberg Mose, near Odense, near Ringsted, and at Östrupgaard in Fyen. An old bird was shot in Fodstette Mose, on Langeland, in June 1874; and according to Boie it is said to have bred near Kiel; but Mr. Benzon informs me that there is, so far as he can ascertain, no authentic instance of a nest having been found in Denmark. In Western Germany the Little Bittern breeds not unfrequently, especially, it is said, along the Rhine not far from Darmstadt; and I have met with it on several occasions in the Rhenish Provinces. In Holland it breeds in the larger marshes and on the banks of the meres, though, as Mr. Labouchere informs me, not so numerously as it used formerly to do. It arrives in May, and leaves again in September. In Belgium it occurs somewhat irregularly, on passage, in spring and autumn; but it visits the Campine and Poldero more regularly, nesting on the Moselle. It arrives in the northern provinces of France in May, and leaves in the autumn; and in the south of France it occurs at the two seasons of passage, some few remaining to nest in the Camargue.

It is said to be by no means common in Portugal, but numerous in some parts of Spain, notably in the Albufera of Valencia. Colonel Irby says (Orn. Str. Gibr. p. 187):—"The Little Bittern is, in Andalucia, entirely migratory, arriving late in April. Considerable numbers nest among rushes and sedges. They are late breeders, nesting early in June, and laying as many as six white eggs. I have no exact date of the autumnal migration; but they are all gone by October."

Passing eastward, again, I find this Bittern recorded as occurring in Savoy at the two seasons of passage; but very few ever remain there to breed. In Italy it arrives in the early spring, and remains, in suitable localities, until the autumn; in Sicily it is very abundant, especially in the marshes of Catania, Lentini, and Terranova. Mr. Wright has met with it frequently in Malta, especially in April, May, and September; but Mr. Wharton only once met with it in Corsica, near Bastia, in April.

In Southern Germany it breeds here and there, and, according to Fritsch, is the commonest of the Ardeidæ in Bohemia, arriving in April and leaving in September, nesting even close to the town of Prague. On the whole, it is not a common species near Cilli, in Styria, because large reed-patches are wanting; but Mr. Seidensacher informed me that he found a nest there on the 25th June 1862, quite close to the town. On passage he has seen examples as late as December. Throughout Austria it is found, being by no means rare in suitable localities; and in the marshes of the Lower Danube it nests quite commonly, breeding in colonies with *Ardea garzetta* and *Ardea ralloides*.

In Southern Russia it is almost everywhere a common species. Von Nordmann says that it frequents the gardens on the banks of streams near Odessa, and along the Salghir; and, according

to Goebel, it is tolerably numerous in the Uman district, where he noticed straggling pairs on almost all the larger and even smaller ponds overgrown with reeds. They were usually seen from the middle of April to the first week in October. In Asia Minor and Greece it is also tolerably numerous. Dr. Krüper speaks of it as being common in Greece, where it arrives late in March or early in April, and remains to breed. It does not winter there; but a young bird in the Athens Museum was shot as late as the 12th November. According to Lord Lilford (Ibis, 1860, p. 347) the Little Bittern "arrives in considerable numbers in Corfu and Epirus in April, and remains to breed, leaving the country about the end of September. In Corfu they are often to be found perched in the olives near the marshes, motionless, with outstretched neck, and beak pointing to the sky. More than once I have caught this species with my hand; and my old retriever often brought me Little Bitterns alive, in the marshes of Butrinto, where I have found the nest in a tamarisk a few inches above the water. The curious habits of this species make it an interesting pet, though I have not found it easy to keep it alive for any length of time." It is a migrant on the Cyclades, and is said to be common in Crete to about the middle of May, when it disappears. Canon Tristram met with it in Palestine; and in North-east Africa it is found throughout the winter. Von Heuglin is unable to say with certainty if this bird breeds in North-east Africa; but he met with it in full spring dress in May in the lagoons of Lower Egypt and near Chartoum, and in June he shot two old and one young bird near Rosetta. In August, September, and October he met with individuals on passage in Dongola, on the White Nile and Blue Nile, and one solitary bird in the Gulf of Tedjura. Loche speaks of it as being common and resident in Algeria; and Mr. Salvin found it extremely numerous in the marsh of Zana; but Favier says that it is the scarcest of the Ardeidæ near Tangier, where it occurs on passage in April and August.

It is also found on the Azores and Madeira, being, according to Mr. Godman, met with on the central group of the former islands.

How far south it ranges on the continent of Africa I cannot determine, as there is also in that country another closely allied form, *Ardetta podiceps*, Bp. Mr. Andersson, speaking of *Ardetta minuta*, says (B. of Damara Land, p. 293), "I never met with this species in Damara or Great Namaqua Land; but it is not uncommon on the rivers Okavango and Teoughe, and also at Lake Ngami. It inhabits marshy districts, where it hides closely, coming out on the approach of night to feed on small fish and reptiles, and also on insects and mollusca. It is found singly or in pairs." Mr. Gurney, also, referring to a specimen shot at Potchefstroom, in the Transvaal, in February 1872, says, "This specimen was sent to me by Mr. Ayres soon after it was shot; and I then considered it to be an example of *Ardetta podiceps*; but having recently carefully reexamined it, and compared it with other specimens, I believe it to be an adult female of the true *Ardetta minuta*; and Mr. Sharpe, to whom I have submitted it, agrees with me in this opinion."

I am indebted to Canon Tristram for the loan of specimens of *Ardetta podiceps* from the Transvaal which differ from *Ardetta minuta* very perceptibly. An adult male differs in having the sides of the head, of the neck, and of the hind neck rich foxy red, becoming rather paler towards the front of the neck; and it is slightly smaller in size than any of my specimens of *Ardetta minuta*. A couple of young males are also more brightly coloured than the young of

our European bird; and the neck, especially, is more rufous; and a still younger bird from the Cape colony in my own collection is also darker than any of the young of *Ardetta minuta*.

In Asia the Little Bittern ranges as far east as the Himalayas. Dr. Severtzoff believes that it breeds in Turkestan; and Mr. Blanford says (E. Pers. ii. p. 296), "I found the Little Bittern common in two or three places in Southern Persia and Balúchistán amongst thick bushes and reeds beside streams. Major St. John told me he had once before met with it in Southern Persia after an unusually severe winter (as that of 1872 was). Eichwald mentions its occurrence on the Caspian." Dr. Henderson found it breeding in Cashmere; and Mr. A. O. Hume writes (Lahore to Yark. p. 296):—"This species is found in many parts of the interior of the Himalayas where much rice is grown. I have it from Nepal, and have shot it at Syree, below Simla, in the upper valley of the Bias, in Kulu, and in many similar localities, but always in the neighbourhood of extensive rice cultivation." This gentleman further writes (Stray F. i. p. 256), "I obtained a single specimen of this species, which I have never before known to occur in India out of the Himalayas, in a large broad at Dost Ali, near Larkhana. I was beating a clump of reed, rush, and tamarisk (a little island, in fact, of these) for Cetti's Warbler; Coots and Water-hens innumerable had been driven out, when I observed this queer little Heron creeping about from bough to bough near the bases of the tamarisk bushes, and shot it. I never saw a second specimen; but if it always keeps as close in the daytime as this bird did, this is not to be wondered at, since after I had secured a certain number of specimens of Cetti's Warbler, I never again attempted to beat these thickets." In China, Japan, the Philippines, and Celebes the Little Bittern is replaced by *Ardetta sinensis* (Gmel.), the male of which differs in having the back deep brown, not black; and in America it is replaced by *Ardetta exilis*.

In general habits the present species is a regular Bittern; but it is much more active and graceful in its movements than the Bittern, or even any of the smaller Herons. When standing, it holds its body erect, the neck being bent and drawn close in towards the body, the beak being held horizontal; and it frequently rests on one leg, the other being drawn up into its plumage. When disturbed, it prefers to glide away amongst the dense aquatic foliage rather than take wing, and is very hard to flush. It climbs about amongst the reeds or the branches of trees with the greatest ease, and slips with celerity through the densest reed thickets. Its flight is different from that of any of its allies; for it uses its wings much more powerfully, and not only flies swiftly, but it can turn and twist on the wing with tolerable ease. It is, however, very shy and secretive in its habits, and is but seldom seen away from the densely overgrown marshy places where it takes up its abode, except in the dusk of the evening, when it appears to fear intrusion less than in the daytime. It feeds chiefly by night, and eats small fish, aquatic insects of various kinds, small frogs, and but seldom shell-fish or worms.

The call-note of the male during the breeding-season is not unlike that of the Bittern, but is much softer, and resembles the syllables *būm*, *būm*, uttered two or three times slowly in succession; and the female when disturbed utters a note resembling the words *gett*, *gett*, *gett*.

The nest of the Little Bittern is a somewhat heavy and clumsy structure of aquatic plants, often intermixed with twigs in the foundation, and lined with finer grasses or flags; it is placed either near or far from the shore, less frequently on the ground than a little distance above it, and always well hidden in marshy damp localities. Blasius says that all the nests he has taken

were placed amongst reeds over very shallow water, not a foot above the ground; and, according to Gloger, it very frequently utilizes a deserted Magpie's nest which has been built on a shrub in a willowy marsh, or on a thorn hedge between pools.

The eggs, from five to nine in number, are very small, less in size even than Pigeons' eggs, and are rather elongated oval in shape, dull, and devoid of gloss, bluish white in colour; but when blown they fade to a dull white tint.

The female sits very closely for sixteen or seventeen days, and even when the young are hatched she still sits to protect them; and both parents exhibit the greatest solicitude for their offspring until they are able to take care of themselves.

The specimens figured are the adult male and female above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Southern France, April 1878 (*Schlüter*). *b*, ♀ *ad.* Italy (*Schlüter*). *c*, ♂. Malta, May 1867 (*C. A. Wright*). *d*, ♂ *ad.* Albania (*H. Barclay*). *e*, *f*, ♀. Algeria (*Fairmaire*). *g*, ♂. Tunis (*Fairmaire*).

E Mus. Brit. Reg.

a, ♂, *b*, ♀. North Africa.

E Mus. E. Hargitt.

a. Havre, October 10th, 1872. *b*. Noury, France. *c*, ♀. Noury, July 1874 (*Plûche*).

E Mus. H. B. Tristram.

a. Bougazoul, Sahara, June 2nd, 1856. *b*. Lake Huleh, Palestine, May 6th, 1864 (*H. B. T.*).

E Mus. C. A. Wright.

a, ♂. Malta, April 25th, 1874 (*C. A. W.*).

E Mus. Howard Saunders.

a, ♂, *b*, ♀. Near Seville, April 12th (*H. S.*). *c*, ♂. Malaga, July 28th. *d*, ♂ *juv.* Valencia, October 15th (*R. Martin*).

Genus NYCTICORAX.

Ardea apud Brisson, Orn. v. p. 412 (1760)
Nycticorax, Stephens in Shaw's Gen. Zool. xi. p. 609 (1819).
Nyctiardea apud Swainson, Classif. of B. ii. p. 355 (1837).
Nycterodius apud Macgillivray, Man. Brit. B. ii. p. 127 (1842).

The Night-Herons inhabit the Palæarctic, Ethiopian, Oriental, Australian, Nearctic, and Neotropical Regions, only one species being found in the Western Palæarctic Region.

The Night-Herons are tolerably closely allied to the Bitterns, but are of a more robust build, and more active in their general habits. They frequent the neighbourhood of water; for they feed on fish, reptiles, and aquatic insects. They climb amongst the dense aquatic herbage and the branches of trees with great ease, and frequently rest perched on the top of a high tree. Their flight is soft and noiseless; but though sedate, it is tolerably swift; and their note is a harsh croak. They are about both by day and by night, and are said to search after food often all through the night.

They construct their nests of twigs lined with aquatic plants, fine roots, &c., and deposit blue eggs. The nests are placed either on trees or bushes, or amongst dense reed-thickets.

Nycticorax griseus, the type of the genus, has the bill scarcely longer than the head, stout, nearly straight, the upper mandible curved gradually to the tip, which is acute; nostrils linear; wings broad and full, the first quill about equal to the fourth, the second and third nearly equal; tail short, even; legs long, rather stout; tibia bare for about one fourth of its length; tarsus anteriorly scutellate; toes long, scutellate; claws moderately long, slightly curved, acute, that on the middle toe serrated on the inner edge; plumage soft, full, feathers on the occiput long, narrow, forming a pendent crest.



JGKeulemans lith

Hanhart imp

NIGHT-HERON.

NYCTICORAX GRISEUS.

NYCTICORAX GRISEUS.

(NIGHT-HERON.)

Ardea grisea, Briss. Orn. v. p. 412, pl. 36. fig. 1 (1760).
Ardea mexicana cristata, Briss. tom. cit. p. 418 (1760).
Ardea botaurus nævius, Briss. tom. cit. p. 462 (1760).
Ardea nycticorax, Briss. tom. cit. p. 493, pl. 39 (1760); Linn. Syst. Nat. i. p. 235 (1766, ex Briss.).
Ardea grisea, Linn. tom. cit. p. 239 (1766, ex Briss.).
Le Pouacre de Cayenne, D'Aubenton, Pl. Enl. no. 939 (1770).
Ardea kwakwa, S. G. Gmel. Nov. Com. Petr. xv. p. 452, pl. 14 (1771).
Ardea ferruginea, S. G. Gmel. tom. cit. p. 456, pl. 16 (1771).
Le Bihoreau, Buff. Hist. Nat. Ois. vii. p. 435, pl. xxii. (1780).
Le Butor tacheté ou *Pouacre*, Buff. tom. cit. p. 427 (1780).
L'Hocti, Buff. tom. cit. p. 382 (1780).
Ardea cyanocephala, Molina, Sagg. Stor. Natural. Chili, p. 344 (1782).
Ardea nævia, Bodd. Tabl. Pl. Enl. p. 56 (1783, ex D'Aub.).
Jamaica Night-Heron, Lath. Syn. iii. p. 54. no. 14 (1785).
Ardea gardeni, Gmel. Syst. Nat. i. p. 645 (1788).
Ardea maculata, Gmel. ut suprà (1788, ex Briss.).
Ardea jamacensis, Gmel. tom. cit. p. 625 (1788, ex Lath.).
Ardea hoactli, Gmel. tom. cit. p. 630 (1788, ex Briss.).
La Tayazu-Güirá, Azara, Apunt. iii. p. 173. no. 357 (1805).
Nycticorax europæus, Steph. in Shaw's Gen. Zool. xi. p. 609 (1819).
Ardea tayazaquira, Vieill. Encycl. Méthod. iii. p. 1130 (1823, ex Azara).
Ardea sexsetacea, Vieill. tom. cit. p. 1129 (1823).
Nycticorax vulgaris, Ehr. Symb. Phys. fol. *m* (1828).
Nycticorax brevipes, Ehr. ut suprà (1828).
Nycticorax orientalis, C. L. Brehm, Vög. Deutschl. p. 592 (1831).
Nycticorax badius, C. L. Brehm, op. cit. p. 592 (1831).
Nycticorax meridionalis, C. L. Brehm, ut suprà (1831).
Nycticorax gardeni (Gm.), Jardine, in Wils. Am. Orn. iii. p. 5 (1832).
Ardea discors, Nutt. Man. Orn. U. S. ii. p. 54 (1834).
Nyctiardea europæa (Steph.), Swains. Classif. of B. ii. p. 355 (1837).
Nycticorax americanus, Bp. Comp. List, p. 48 (1838).
Ardea (*Scotaeus*) *nycticorax* (L.), Keys. & Blas. Wirbelth. Eur. p. 80 (1840).
Nycticorax ardeola, Temm. Man. d'Orn. iv. p. 384 (1840).
Nycterodius nycticorax (L.), Macg. Man. Brit. B. ii. p. 127 (1842).
Nycticorax griseus (L.), Gray, Gen. of B. iii. p. 558 (1847).

Nycticorax nævius (Bodd.), Gray, Gen. of B. iii. p. 558 (1847).
Scotaeus nycticorax (L.), Heugl. Syst. Uebers. Vög. N.O.-Afr. p. 59 (1856).
Scotaeus guttatus, Heugl. ut suprà (1856).
Nyctiardea gardeni (Gm.), Baird, B. N. Am. p. 678 (1858).
Nycticorax ægyptius, Gurney, in Anderss. B. of Damara L. p. 293 (1872).
Nyctiardea nycticorax (L.), Swinhoe, P. Z. S. 1872, p. 413.

Héron bihoreau, French; *Nitticora*, Italian; *Quach*, Maltese; *Nachtreiher, nächtlicher Rohrdommel*, German; *Kwak*, Dutch; *Natheire*, Danish; *Kwakwa*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 758, 759, 939; Werner, Atlas, *Coureurs*, pl. 27; Kjærb. Orn. Dan. taf. 32, Suppl. taf. 14; Frisch, Vög. Deutschl. taf. 203, 203; Fritsch, Vög. Eur. taf. 40. figs. 6, 7; Naumann, Vög. Deutschl. taf. 225; Sundevall, Svensk, Fogl. pl. 75. figs. 4, 5; Gould, B. of Eur. pl. 279; id. B. of G. Brit. iv. pl. 26; Schlegel, Vog. Nederl. pls. 193, 194; Roux, Orn. Prov. pls. 317, 318; Audub. B. of Am. pl. 363; Wilson, Am. Orn. pl. 61. fig. 2.

Ad. pileo, dorso et scapularibus nigris viridi metallico nitentibus, plumis nuchæ tribus valdè elongatis et angustatis, niveis: fronte et striâ superciliari albis: tergo, alis et caudâ cervino-cinereis: gulâ albâ: corpore subtùs albo vix cinereo-cervino tincto: rostro nigro, ad basin flavido: pedibus viridi-flavis: iride rubrâ.

Juv. pileo et nuchâ sordidè fuscis rufescente cervino et albido striatis: corpore suprà saturatè umbrino-fusco, dorso æneo nitente et ubique albo guttato: remigibus secundariis et tectricibus alarum versus apicem conspicuè albo notatis: mento albo, gutture et corpore subtùs sordidè albidis fusco-striatis, gutture et pectore ochraceo lavatis.

Adult Male (Malta). Forehead and a line over the eye white, crown and nape black with a greyish tinge, and glossed with blue and bottle-green; feathers on the nape elongated, and three or more very long, narrow, white feathers extend from the nape; back and scapulars black glossed with bottle-green or bluish purple; rest of the upper parts, the wings, and the tail ashy dove-grey or dull dove-blue with a buffy tinge; edge of the wing nearly white; chin, throat, and sides of the head white, the latter washed with vinous buff; rest of the underparts white slightly tinged with ashy grey, the flanks washed with buffy dove-grey; bill blackish; lore bluish grey with a yellow tinge; legs dull ochreous yellow; iris deep red. Total length about 21 inches, gape 3·7, wing 11·4, tail 4·7, tarsus 3·05.

Young (Foochow, November). Crown and nape dull brown striped with rufous buff and white; upper parts generally dark warm earth-brown, the back with a bronze tinge, and conspicuously spotted with white, these spots being largest on the tips of the wing-coverts and secondaries; tail brownish ash-grey; underparts dull white, on the throat and breast washed with warm ochreous buff, and almost everywhere closely striped with dark brown; chin nearly pure white; iris reddish yellow; lores pale yellowish green, becoming blue towards the bill; base of the lower mandible light yellowish green; legs dull yellowish green; claws pale brown.

Obs. A rather older bird, which I have figured, is much less spotted on the upper parts, which are paler;

and there is in many parts a tendency to assume the colours of the adult; the underparts are also paler, and considerably less striped than the young example. Mr. Swinhoe gives an excellent description of the young bird in nestling-plumage (Ibis, 1861, p. 54), which I transcribe as follows:—

"In the smaller chick procured the eye was just opened, and of no determined colour. The bill and lore were of a yellowish flesh-colour, very pale, and tinged with blue. The legs of a similar colour, with pale claws. The head and back were covered with a long blackish down, and the rest of the body with more or less whitish down, somewhat resembling sheep's wool. The black down on the head was drawn out into long white tufts, which stood out from the head like a crown of thick threads.

"In the larger chick the eye was of a pale sea-green; the lore and bill were tinged with yellowish green. The long down of the head had opened out into filamentous ends. The legs were bluish sea-green above, and sienna-yellow beneath. The bare skin of the round projecting belly was sea-green, as also the dorsal skin. The colour of the down was light purplish grey, tipped with white on the crown, and giving place to white on the flanks and belly."

As a rule, the adult bird has three long occipital white plumes; but some specimens have four, six, and even occasionally as many as eight or ten of these plumes. My artist, Mr. Keulemans, has a sketch of one he had for examination, which had ten plumes, which he has utilized in drawing the Plate of this species.

After a careful examination of specimens from various parts of the world, I cannot find any valid reason for separating them specifically. In fact the only difference is in size, the American bird being the largest, and those from China the smallest. Three fully adult males measure as follows: viz. one from New Brunswick measures—gape 4·05, wing 12·5, tail 4·7, tarsus 3·25; one from Europe—gape 3·7, wing 11·4, tail 4·7, tarsus 3·05; and one from China—gape 3·55, wing 10·35, tail 4·0, tarsus 3·0.

The fully adult plumage is only gradually assumed; and, so far as I can judge, the bird does not attain its full beauty of dress until it is three or four years old.

The present species is chiefly to be met with in the southern and eastern portions of our continent, and but seldom occurs in Northern Europe. In Africa it is found as far south as the Cape of Good Hope; in Asia east to Japan, and south into the Malay archipelago; and in America from the Northern United States down to Central America.

To us in Great Britain the Night-Heron is only known as a rare straggler; but it has been observed so often that it may almost be looked on as an annual visitor. I doubt, however, the statement made by Mr. Harting that there is reason to believe that it used formerly to nest regularly in England. Yarrell remarks (Brit. B. ii. p. 583) that it has been killed in Sussex, Dorsetshire, Devonshire, Cornwall, Lancashire, Flintshire, Anglesea, Bucks, Bedfordshire, Oxfordshire, Suffolk, Norfolk, Hants, and Yorkshire. Mr. Stevenson says, in his work on the Birds of Norfolk, that "the earliest record of its occurrence in that county is that of the late Sir W. Hooker, to the effect that one was shot by Mr. Stagg, in Yarmouth, about the year 1800. We have next," he adds, "the evidence of Messrs. Paget, in 1834, that Mr. Youell had known six or seven of them to have been killed in that locality at different times, and in Mr. Hunt's list another at Holkham—the latter, according to Messrs. Sheppard and Whitear, in 1819. Again on the 24th May 1824, from a fruit-tree out of the North Gates at Yarmouth, was shot the memorable specimen which, first recorded by Mr. Youell in the Linnean Society's 'Transactions' (vol. xiv. p. 588) as the Cayenne Night-Heron (*Ardea cayennensis*, Linn.), was, as such, included by Selby in his 'Illustrations of British Ornithology.' This bird, however, which is now in Mr. Gurney's collection, and was purchased by him from the late Mr. Thurtell, of Eaton, has

been long since established as only a very fine adult specimen of *Nycticorax griseus*. In the same winter of 1824, according to some notes recently supplied me by Mr. Rising, of Horsey, no less than three specimens of this Heron were killed on the North Denes, at Yarmouth; and another, in his own collection, was shot by his father about two hundred yards from the front of his residence at Horsey in April 1827. Since that time this species has become an extremely rare visitant to our coast, the only recent instance to my knowledge being an immature bird killed on the 8th of November 1860, in the Caister marshes near Yarmouth." According to Mr. Cordeaux a specimen was killed a few years ago near Cottingham, about five miles from Beverley, Yorkshire; and Mr. Hancock says it is a very rare and casual visitant to Northumberland and Durham. One was shot (*fide* T. H. Gibb, Berw. Natur. Club, 1870, p. 174) on the 24th November near the confluence of the Cawledge burn with the Aln. In Scotland it is also seldom seen. Sir William Jardine states that two were shot by the Earl of Home, near Coldstream, in 1823; and one in his own collection was killed on the banks of the Cluden, in Dumfriesshire, in 1825. Mr. Robert Gray records the occurrence of one at Menie, about eight miles north of Aberdeen, on the 9th of January 1866; and he adds that his friend the late Dr. R. D. Thomson mentions it as a rare visitor to the parish of Eccles, in Berwickshire.

In Ireland, Thompson says (B. of Irel. ii. p. 173), "it is of very rare occurrence. One which I saw in the shop of Mr. Glennon, bird-preserver, Dublin, in March 1834, and noticed in the 'Proceedings of the Zoological Society' for that year (p. 30), was stated by him to have been sent in fresh condition from Letterkenny, in the county of Donegal. It was at the same time mentioned that two or three other examples, killed in Ireland, had been sent to him. Subsequently he informed me of the occurrence of another individual."

There is a single instance of the occurrence of the Night-Heron in the Færoes, an immature male having been shot at Nordedhal, on the island of Stromoe, in July 1870; but, so far as I can ascertain, it has not straggled so far as Norway or Finland; but Dr. Sundström informs me that a young female was shot in Skåne, Sweden, in 1863; and it is said to be of but rare occurrence in Central Russia. Artzibascheff, however, states that it is very common on the Lower Volga, especially near the mouth of that river. It is much less frequently found on the Sarpa.

In Poland, according to Mr. Taczanowski, it passes regularly in summer, and is, as a rule, rare, though in some seasons tolerably numerous. In North Germany it used formerly to be by no means uncommon, and it is stated to breed there now and again, but not regularly. Some years ago about eight pairs bred on the Seeburger Lake, near Göttingen, but were shot down. Boeck obtained two pairs in Prussia about the middle of May. According to Naumann (Naturg. Vög. Deutschl. ix. p. 155) it nested formerly in abundance in the Spreewald, in Niederlausitz, but is now no longer found there; and some years previously several pairs bred in a heronry near Oderberg; but the Cormorants took possession of this nesting-place, and drove out both them and the Herons. At present, Mr. Schalow writes (J. f. O. 1876, p. 17), it is only a straggler to Mark Brandenburg from the south-east. Schulz obtained one from Neumark; there is a specimen from Mark in a small collection at Grunewald; and a female from Spandau is in the Berlin Museum.

According to Collin there are several instances of its occurrence in Denmark. One was shot at Neumünster, in Holstein, in May 1821; and about the same time Teilmann shot one at Ribe;

Mechlenburg records the occurrence of one on Sylt; and some years ago a pair were shot at Elbbredden. There is a specimen from Brunsbüttel in Wöldike's collection, and one in Mr. Uwe Petersen's collection, shot on Sylt.

In Holland it used formerly to be tolerably common; but now it is of but rare occurrence there, as well as in Belgium, on passage. In the north of France it occurs only on passage, but breeds in the southern portions of that country. Degland says that he possesses a specimen shot near Lille in April, and has seen an adult bird which was killed near Calais in May. According to M. Adrien Lacroix it occurs on passage in the spring and autumn in the French Pyrenees; and a few pairs remain to breed in Hérault. It occurs in Portugal, but does not appear to be very common in any part of the country, though in Spain, as Lord Lilford informs me, it is numerous in many localities; and Mr. Saunders writes (Ibis, 1871, p. 392), it is "very abundant in the marshes of the Cotos, where it breeds in colonies on small trees. In a clump of bushes rather than trees, near the Palace of the Coto del Rey, I saw dozens of old nests, at elevations of from five to fifteen feet from the ground, the construction being but a trifle more substantial than that of a Ringdove, though somewhat larger." In Andalucia, Colonel Irby says (Orn. Str. Gibr. p. 187), "these Herons are entirely migratory, chiefly arriving in April; but I have no date of their autumnal departure, and never observed any very near to Gibraltar. About the district of Seville they are common, nesting in companies on trees on the Rocina, near Rocio, and on the banks of rivers—like the other smaller Herons, breeding rather late. The Night-Heron, as its name implies, is a nocturnal-feeding bird, frequenting trees by day, and if disturbed usually flying from one tree to another; but I have scarcely ever seen them on the move by day, unless frightened up." In the Balearic Isles the present species is quite as numerous as the common Heron; and it is found in all the countries skirting the Mediterranean. According to Salvadori it is tolerably common in Italy on passage; and Dr. Giglioli says (Ibis, 1865, p. 60) that near Pisa "the Night-Herons arrive in May; they are mostly adult individuals; and after dusk their melancholy '*qua-a*' may often be heard along the Arno, while their white ghost-like *silhouettes* may be seen through the increasing gloom stalking about on the sandbanks in the river. The long white feathers which form the occipital crest in this species vary much in number. I got a specimen with as many as six; three is, I believe, the ordinary number." In Sicily, Malta, and Sardinia it passes regularly; and on the Lake of Cagliari Salvadori saw numbers even in winter. It is said to breed in Northern Italy.

In Southern Germany it is tolerably common, becoming more so in the eastern portions. Dr. Anton Fritsch writes (J. f. O. 1871, p. 392) that it visits Bohemia almost every year; and according to E. Purkyne it has been found breeding near Weisswasser. Old birds as well as young have been killed near Pardubic (*Hromadko*), near Podebrad (*Hoffmann*), near Jicin, in the forest of the Stribrnitz district, at the Zvolenov pond near Frauenberg, and Grosstisi near Wittingau. Von Tschusi-Schmidhofen says that there are two specimens in the Carol. Aug. Museum; and according to Dr. Storch one was shot at Gastein in April, and a second at Hüttau in November 1872. According to Messrs. Danford and Harvie-Brown (Ibis, 1875, p. 425), "this species is migratory and not uncommon in Transylvania; at Záh we found a large colony, which was chiefly composed of adult birds with a small sprinkling of immature examples. They had not begun to breed when we left in the middle of May. In the Klausenburg Museum

is a specimen with four crest-feathers." In Hungary and in many localities along the Danube I found the Night-Heron very generally distributed; and near Belgrade, I was told, there are some numerously frequented breeding-places. In the low portions of Wallachia and in Bulgaria it is also far from uncommon, and breeds in suitable localities; and Dr. Krüper states that it arrives in Greece later than the Purple Heron and Egret, usually appearing in April; but he is unaware if it remains there to breed.

In Southern Russia, as above stated, it is tolerably numerous; and Mr. Goebel, in his Notes on the Ornithology of the Uman District, remarks (J. f. O. 1871, p. 143), "There is a large colony of this species on some high alder and oak trees growing on an island in the Sokolow swamp. This island can be visited in a boat till the beginning of May; later it is unapproachable, which accounts for my not having yet been able to obtain a clutch of eggs. On smaller swamps and ponds it is only seen during migration. I observed on a very small swamp a flock of at least fifty individuals on the 27th of April 1867, thirty on the 5th of October 1868, and twelve on the 1st of October 1869."

I find but little on record respecting the occurrence of the Night-Heron in Asia Minor; but Canon Tristram met with it in Palestine, where, he remarks, it resorted chiefly to the outskirts of the swamps. In Africa it is found breeding as far south as the Cape colony. Captain Shelley writes that it is "abundant throughout Egypt, usually in flocks, frequenting clumps of sont and palm trees. They are not shy, and are often difficult to drive out of the thicker-foliaged trees. When disturbed they rise awkwardly, a few at a time; but when once fairly started they mount high, and fly for a considerable distance." Von Heuglin speaks of the Night-Heron as being one of the commonest species in North-east Africa, and he believes that it breeds there, though he never found a breeding colony. In January, February, and March he saw vast flocks on the Blue and White Nile, as also on the Lower Sobat, and in April on Lake Tana, in Abyssinia. In May he met with individuals in full breeding-dress in Abyssinia. In Algeria it is tolerably common. Mr. Salvin only observed it on the lake at Bizerta; but it has been recorded from several other localities; and Canon Tristram met with it in the palm-forests of Tuggurt, but adds that it is probably found throughout the whole of the Wed R'hir. Mr. Tyrwhitt Drake records it from Tetuan; and according to Favier (*fide* Colonel Irby) it is common near Tangier on passage. Colonel Irby himself saw this species near Larache in April, and near Tetuan at the end of March. It is stated by Vernon Harcourt to occur in Madeira; but Mr. Godman does not include it. On the west coast of Africa it has been obtained in Senegambia, Bissao, the Gaboon, Gold-coast, and Benguela. Mr. Sharpe received a specimen from Fantee; and Mr. Ussher observes that it is common on the Winebah river, but he did not meet with it elsewhere. In the 'Birds of Damara Land,' p. 293, Mr. Andersson writes:—"This species is pretty frequent in the lake-country; it occurs in Ondonga in the wet season, and is recorded as having been obtained on the Orange river. In Damara Land I have only observed it very rarely, and always in immature plumage. It feeds on fish, reptiles, aquatic insects, slugs, &c." According to Mr. E. L. Layard (B. S. Afr. p. 312) it is generally distributed throughout the Cape colony, but is nowhere common. A young bird, still having remains of down in its plumage, was brought to him from Zeekoe Vley, on the Simons-Bay road; so it must certainly breed near there. It occurs, though very seldom, in Natal; Mr. Ayres met with it in the Transvaal; and Dr. Kirk states (Ibis, 1864,

p. 333) that in the Zambesi region it is common in all marshes, and roosts among the reeds on the islands, and it is stated to inhabit Madagascar, where, however, it is rare.

In Asia the Night-Heron ranges eastward to Japan, and south to the Malay archipelago. Ménétriés met with it at Lenkoran; Mr. Blanford saw it at Isfahán; and Major St. John found a colony inhabiting a large cypress tree in a garden at Firúzabád, eighty miles south of Shiráz, in the winter of 1866–67. Mr. Hume often observed it in Sindh; and according to Dr. Jerdon (B. of India, ii. p. 759), "the Night-Heron is found throughout India, is very common in many parts of the country, but is somewhat local in its distribution. During the day it roosts in palm-groves, tamarind-trees, and patches of jungle near water, issuing forth soon after sunset, and winging its way towards its feeding-ground, uttering at intervals its well-known cry *wah-wak*, which has been given as its name throughout the greater part of India." Dr. Henderson found it abundant in the lower valley of Cashmere; according to Mr. Holdsworth (P. Z. S. 1872, p. 478) it is not uncommon in Ceylon in suitable localities; and Davison met with it on Trinkut Island, Nicobars. Eastward it is common in China, breeding in the interior to Pekin; and Mr. Swinhoe noticed it also on the island of Formosa. It is also, according to Von Siebold, numerous in Japan. Meyen records it from Manilla; and I have seen examples from the Philippines.

In America the Night-Heron is widely distributed. I found it rare in New Brunswick; but it is said to breed abundantly in the New England States; and Mr. C. H. Merriman states that it is a common summer resident in Connecticut, remaining into October. It winters in the Southern States and Central America. I found it tolerably common in those portions of Texas I visited; Messrs. Sclater and Salvin record it (Ibis, 1859, p. 227) from Central America; and Mr. A. von Frantzius writes (J. f. O. 1869, p. 376), "This Night-Heron, which ranges in South America from the Argentine provinces to Guiana, is very rare in Costa Rica; to my knowledge it has been shot there only on one occasion." Further south in America it is replaced by a closely allied species, *Nycticorax obscurus* (Licht.). It is also found in the West Indies; and Dr. Gundlach says that it is found in Cuba throughout the year, and undoubtedly breeds there.

The Night-Heron, as its name implies, is, to a large extent, nocturnal in its habits, though not altogether so; for it is not unfrequently found prowling about during the day. As a rule, however, I have discovered them hidden away in some densely foliaged tree during the brighter portions of the day; but so soon as it begins to get dusk they appear to regain their activity, and sally forth in search of food. I have generally found it amongst trees, and less seldom in low bushes or rushes, but always in some damp, swampy locality; and it appears, as a rule, to sit on a large branch with its neck drawn in and body elevated, and will remain for long in the same position if undisturbed. It is shy and suspicious, avoiding the vicinity of inhabited places, and resorting to localities where it is seldom molested or disturbed by man, except in those countries where it is protected and held sacred, as in China. Mr. Swinhoe gives a most graphic description of one of these colonies at Canton (Ibis, 1861, p. 53):—"This is the sacred bird of the great Honam Temple, Canton. The court-yard in front of this temple contains some venerable banyans, as well as a few towering cotton-trees (*Bombax malabaricum*). On the higher branches of the former the small flat wicker nests of the Night-Heron may be seen in all directions, some only a foot or so from others; and the croaking and flapping and fighting that goes on overhead bears some distant resemblance to the crowded deck of an emigrant steamer on first

encountering a turbid sea. The granite slabs that form the pavement beneath these trees are so bedaubed with the droppings of old and young, that permission to scrape them clean daily might prove a fine speculation for the guano-collector. The birds, from the protection afforded them, were remarkably tame, and we could stand beneath the trees and watch them without their evincing the slightest fear. This was in April. Some might be seen *sitting* on their nests, with their long legs bent under them, the weight of their bodies resting for the most part on the tarsal joint; others standing on single leg close by, with shortened neck, the beak and head occasionally moving partially round as on a pivot; others flapped to and fro, ruffling up their head-gear, and occasionally sparring together. In their various movements the dark green-black of the head and back with the thin snow-white occipital streamers flowing and quivering over the latter gave a quaint though not ungainly look to the birds. From some of the nests we heard a subdued chattering like the cry of young; and it was to feed these hungry mouths that the parents were constantly leaving the trees to seek for food at all times of the day; while others were returning with supplies. As the sun set, however, they became more active. While I sat watching them from a neighbouring roof-top in the evening, numbers of them emerged from the leafy darkness, and one by one settled on the stark bare outstanding arms of the cotton-tree. After resting for a little time like gaunt spectres on the tree-top, off they went, one after the other, with a '*kwa*'—seldom more than two in the same direction. As darkness set in, many returned, and the noise and hubbub from the trees rose to a fearful pitch. Until night hid them from my view, I could see the old birds going and coming, and hear the clamour of the young. What kind of nocturnal slumbers the priests enjoyed in the temple below, I never took the trouble to inquire, though I have little doubt that, from constant use, the noise of these *croakers* has become quite essential to their good night's rest.

"Though these birds moved about very much during the day, yet it strikes me that twilight is the most active time with them, and that in most instances the departures during the day were to seek food for the newly-hatched young, which would require feeding oftener at first, and perhaps with more choice food.

"I sent my man up one of the trees, whence he brought down three nests, two of which contained eggs, and the third, two young birds and one egg. Judging from their size, one of these little birds must have been born at least *three* days before the other; and on opening the egg I found a live chick inside, which would have required at least two days before it could have ventured out. The varying stages of the embryos in the other six eggs confirmed this idea. I should say the differences between them could not have been more than *six* days, and certainly not less than three; so that the Night-Heron must commence sitting on the first egg laid, and, while engaged in its incubation, keep on laying, at fixed intervals, the other two, which form the complement."

The flight of the Night-Heron is silent and soft like that of an Owl; and when on the wing the bird draws its neck in so that it looks quite short, and carries its legs stretched out behind. Its call-note, which consists of a harsh croak resembling the syllable *kwak*, is seldom uttered during the daytime; but at night this bird is rather noisy than otherwise, especially at its breeding-places. It perches and walks about on the thin branches of trees with ease, and will step easily, though sedately, along a slender branch without using its wings or losing its balance

in the least. It climbs about also, like its allies, in the dense reed-jungles and amongst high rushes, with great facility, grasping the stems of the water-plants with its long claws.

As a rule, the Night-Heron is a tree-breeder; for though its nest is occasionally placed on low bushes, it is generally built at some altitude in a tree. It is a larger or smaller structure according to circumstances, rather flat in shape, built of dried twigs and thin branches, and lined with leaves of aquatic plants, fine rootlets, &c.; and the eggs, four or five in number, resemble those of the common Heron, but are much smaller and paler. In colour they are pale greenish blue, uniform in tinge, and dull, without any gloss; and those in my collection vary in size from $2\frac{1}{40}$ by $1\frac{13}{40}$ inch to $2\frac{3}{40}$ by $1\frac{19}{40}$ inch.

The specimens figured are an old male and a young bird, both European-killed specimens.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂. Southern Europe. *b*, ♂ *ad.* S.W. Formosa, China, 1861 (*R. Swinhoe*). *c*, *ad.* S.W. Formosa, 1866. *d*, *juv.* Foochow, November 1866 (*Swinhoe*). *e*, ♀. Laguna de Bai, Philippines, December 14th, 1877 (*Everett*). *f*, *ad.* St. Stephen's, New Brunswick, 1864 (*G. A. Boardman*).

E Mus. C. A. Wright.

a, *ad.* Malta. *b*, ♂ *juv.* Malta, June 16th, 1862 (*C. A. W.*).

E Mus. Salvin et Godman.

a, ♀. Medellin, U. S. of Columbia, 1876 (*Salmon*). *b*. Choctum, Guatemala, 1861. *c*. Guatemala.

Genus BOTAURUS.

Ardea apud Linnæus, Syst. Nat. i. p. 239 (1766).
Botaurus, Stephens in Shaw's Gen. Zool. xi. p. 593 (1819).
Nycticorax apud Ehrenberg, Symb. Phys. Av. fol. *m* (1828).
Butor apud Swainson, Classif. of B. ii. p. 354 (1837).

The Bitterns differ from their allies chiefly in having the body much compressed; the feathers on the neck are also much elongated; the head is oblong and much compressed, the legs short, and the toes and claws very long They inhabit the Palæarctic, Ethiopian, Oriental, Australian, Nearctic, and Neotropical Regions, two species being found in the Western Palæarctic Region, one as a resident, the second (*Botaurus lentiginosus*) being only a rare straggler from the American continent.

These birds frequent marshy localities, where, being habitually secretive and shy, resting hidden by day, they are seldom seen. They are nocturnal in their habits, commencing to move about when the shades of evening set in. Their flight is soft and noiseless; and they seldom fly far. Their call in the spring is a peculiarly weird, loud, booming sound, like the distant bellowing of a bull; but their usual note is a clear, loud croak. They feed on reptiles, fish, aquatic insects, and small mammals.

They breed in marshes, their nest being a mere collection of aquatic herbage, placed on the ground amongst the reeds; and their eggs are uniform olivaceous in colour.

Botaurus stellaris, the type of the genus, has the bill longer than the head, compressed, tapering to a sharp point, gape-line straight, upper mandible slightly notched at the tip, nostrils linear; space in front of the eye bare; wings large and full, the first three quills nearly equal, inner secondaries nearly as long as the longest primaries; tail short, even; legs moderately long, stout, and strong; tarsus with broad anterior scutellæ; toes very long and strong, scutellate above; claws long, stout, slightly curved, acute, that on the middle toe scutellate on the inner edge; plumage very full and soft, feathers on the sides and lower part of the neck much elongated, the former directed obliquely backwards so as to cover the hind neck, which is overgrown with soft down only.



BITTERN

BOTAURUS STELLARIS.

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BOTAURUS STELLARIS.

(BITTERN.)

Ardea botaurus, Brisson, Orn. v. p. 444 (1760).
Ardea stellaris, Linn. Syst. Nat. i. p. 239 (1766).
Le Butor, Buffon, Hist. Nat. Ois. vii. p. 411, pl. xxi. (1780).
Botaurus stellaris (L.), Steph. in Shaw's Gen. Zool. xi. p. 593 (1819).
Nycticorax stellaris (L.), Ehr. Symb. Phys. Av. fol. *m* (1828).
Botaurus lacustris, C. L. Brehm, Vög. Deutschl. p. 596 (1831).
Botaurus arundinaceus, C. L. Brehm, tom. cit. p. 596 (1831).
Butor stellaris (L.), Swainson, Classif. of Birds, ii. p. 354 (1837).
Ardea stellaris capensis, Schlegel, Mus. Pays-Bas, *Ardeæ*, p. 48 (1863).

Le Grand Butor, French; *Gallinhola real*, Portuguese; *Avetoro*, *Cangrejera*, Spanish; *Garza stellare*, *Tarabuso*, Italian; *Coppun imperial*, Maltese; *Rohrdommel*, *Rohrdump*, German; *Roerdomp*, Dutch; *Stor Rördrum*, Danish; *Rördrum*, Swedish; *Chepura-Wuipp*, Russian; *Kul-buga* (*Water-bull*), Bashkir.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 789; Werner, Atlas, *Gralles*, pl. 1; Kjærb. Orn. Dan. taf. xxxii.; Frisch, Vög. Deutschl. taf. 205; Fritsch, Vög. Eur. taf. 37. fig. 6; Naumann, Vög. Deutschl. taf. 226; Sundevall, Sv. Fogl. pl. 46. fig. 5; Gould, B. of Eur. pl. 280; id. B. of G. B. iv. pl. 27; Schlegel, Vog. Nederl. pl. 195; Roux, Orn. Prov. pl. 319.

Ad. pileo et nuchâ nigris, nuchæ plumis rufescente ochraceo apicatis: corpore suprà rufescenti-ochraceo, ubique nigro-fusco notato: dorsi plumis et scapularibus centraliter nitidè nigris: remigibus et rectricibus castaneis, nigro-fusco fasciatis: mento ochrascenti-albido, centraliter et lateraliter lineis fuscis notato: collo et pectore plumis elongatis rufescenti-ochraceis nigro-fusco fasciatis et notatis indutis: corpore subtùs pallide ochraceo, vix rufescente lavato, plumis omnibus centraliter castaneis et nigro-fusco marmoratis: subalaribus rufescentibus nigro-fusco fasciatis: rostro viridi-flavo: iride flavâ: pedibus viridibus, unguibus nigricantibus.

Juv. adulto similis sed ubique pallidior et brunnescentior.

Adult Male (Holland). Crown and nape black, the feathers on the latter tipped with warm ochreous; lower neck pale yellowish rufous, irregularly barred with blackish; back and scapulars shining black, broadly but irregularly margined with yellowish rufous, many of the feathers marbled with pale rufous; quills rich chestnut-red, irregularly but tolerably closely barred with blackish; wing-coverts warm clay-colour, variegated with chestnut-red and blackish; tail chestnut-red, marbled and blotched with black; chin buffy white, with a dark brown streak down the centre; from the base of the bill on each side runs a dark brown broad streak; entire neck and breast covered with long feathers, which on the side of the neck are yellowish buff barred with wide V-shaped blackish bars, and in front and on

the breast are warm clay-coloured with broad central streaks of dark rufous marbled with blackish; rest of the underparts warm yellowish buff, streaked with broad lines of blackish brown; under wing-coverts rufous buff, barred with blackish brown; bill greenish yellow; legs yellowish green, almost grass-green; claws blackish; iris yellowish. Total length about 26 inches, culmen 2·8, gape 3·55, wing 11·7, tail 4·45, tarsus 3·5, bare portion of tibia 1·45.

Female. Similar to the male, but less in size.

Young. Resembles the adult, but paler in general coloration, the rusty yellow tinge being replaced by pale yellowish, and the markings are browner.

Nestling in down (*fide* Naumann, Vög. Deutschl. ix. p. 163). Naumann says that he found a nest in which two of the eggs were hatched and the young birds were already dry, two were emerging from the shells, the fifth egg proving to be addled. These young birds he describes as being covered with long, rather loose down, which on the head and upper part of the body had long hair-like points sticking out in all directions. In colour the down is dark rusty yellow, becoming pale rust-red towards the tips. The upper parts of the body were more red, and the underparts more yellowish; bill and feet reddish white; iris pearl-white.

The range of our common European Bittern is very extensive, as it is found throughout Europe, except in the high north, in Africa it occurs as far south as the Cape of Good Hope, and in Asia it is found as far east as Japan. It does not inhabit the Nearctic Region, being there replaced by *Botaurus lentiginosus*. Formerly, when extensive fens and morasses existed in England, it was by no means rare with us, and bred here regularly; but as the fens have been brought under cultivation it has gradually decreased in numbers, until it is now merely a rare straggler, and no longer breeds here. Occasionally it is met with, but more frequently in the autumn and winter than at other seasons. The season of 1874 has been exceptional in that respect; for many instances have been recorded of its occurrence in various parts of England and Ireland. Mr. A. G. More, however, states (Ibis, 1865, p. 433) that the latest instance of its having bred in England that he could hear of was about ten years previous to that date, when a nest was taken at the Reservoirs near Tring. It used probably to be most numerous in our eastern counties, owing to the nature of the country there being most suitable to its habits; but even there it seems long ago to have ceased to breed. On the west side of our island it is rare; and Mr. Cecil Smith informs me that it is looked on as a very scarce straggler in Somersetshire, chiefly owing to its favourite haunts having been drained. In Scotland it is said by Mr. Robert Gray (B. of W. of Scotl. p. 279) not to be a common species anywhere, though, he adds, "I have seen examples from almost every county. The Bittern has once or twice of late years been killed at Possil Marsh, and also at Hogganfield, both places being within a few miles of Glasgow. It has likewise been shot in Arran, Islay, and Mull, but not, so far as I am aware, on any of the other inner islands, except Skye, on which island one was shot in May 1867. On the Outer Hebrides it appears to be a rare bird: one was shot in North Uist a few years ago; but I am not able to quote any other authentic instance of the occurrence of the Bittern in the long island. In the east of Scotland the distribution of the Bittern extends from Berwick to Caithness, the number of specimens obtained being about equal to that met with in the west."

In Ireland, as in England and Scotland, it used formerly to be common, but now appears to be a tolerably rare straggler, but has occurred in most parts of the island.

It is stated (Vid. Medd. 1872, p. 133) to have on one occasion straggled as far north as Greenland; but I do not find any record of its having been obtained in Iceland, and it is said to be entirely wanting in Norway; but is found, Nilsson states, in the large morasses of Sweden from Skåne up to Södermanland or Upland. Kasten states that it was formerly found in the ponds of the large park called Djurgården, outside Stockholm; and according to Lundberg it has of late years been observed in the reeds outside the town of Köping. Near Gothenburg it is less common. It arrives in Sweden, Nilsson adds, about the middle of April and leaves in September, though stragglers have been known to remain as late as November. It is an exceedingly rare straggler to Southern Finland; but Dr. Palmén (Finl. Fogl. ii. pp. 300, 301) records several instances of its occurrence there, and adds that a Finnish-killed specimen is in the collection of the Åbo Gymnasium. Mr. Meves heard it near Sermaks, in Northern Russia, on his journey from St. Petersburg to Archangel; and Mr. Sabanäeff says that it is rare in the Government of Jaroslaf, but commoner in that of Moscow. In the reedy portions of the Bashkir lakes he found it common; and it breeds on the lakes in the Kaslinsk and Keshtemsk Ural. It does not occur in the Ural higher than in about 57° N. lat. I have no data respecting its occurrence in Poland, where doubtless it is found in suitable localities. According to Borggreve it is a rare summer visitant to North Germany. Gloger states that it breeds regularly in Silesia; and Borggreve himself adds that it nests in Mittel-Oderbruch. Boeck obtained it in Prussia; and it is stated to breed in Anhalt, Mecklenburg, Oldenburg, and even on the Mosel. In Denmark, Mr. A. Benzon writes to me:—"It was in former times by no means rare in our lakes and morasses; but as these latter have during the last half century been drained it has become rare. Specimens, however, are shot now and again in various parts of the country; and our Zoological Gardens possess live examples caught here. I possess specimens in my own collection as follows:—an adult male from Utterslev Morass, near Copenhagen, shot in September 1862; an adult male shot at Stenbymölle on Moen on the 2nd April, 1864; and a female (in which an egg ready for exclusion was found) from Guds-Koog, in Schleswig, obtained late in April 1867. I do not know of any instance of its having bred in Denmark proper of late years; but it is known to breed now and then in the marshes of Schleswig and Holstein." In Holland it is common in many parts of the country, and breeds there. Mr. Labouchere remarks that before the reeds have acquired a sufficient height to serve as a good shelter, it roosts in trees. It is rare in the interior of Belgium, but commoner towards the Dutch frontier; and in the north of France a few remain to breed; but elsewhere in this latter country it is a migrant, except in the southern provinces, where a few remain throughout the winter. Professor Barboza du Bocage includes it in his list of Portuguese birds as common; and Lord Lilford, Colonel Irby, and Mr. Howard Saunders all met with it in Spain, where it breeds, and some few appear to remain in the country all the winter, though the major portion migrate southward in the autumn. Lord Lilford obtained its eggs in the Marisma near Seville, where, Mr. Saunders says, it is tolerably abundant. Mr. E. von Homeyer states that it breeds in the Balearic islands, and that he repeatedly heard its cry at the Prat. In Savoy, Bailly says, it occurs during the two seasons of passage, and occasionally winters there, but never remains to breed; and Salvadori writes that it is common in the marshy

portions of Italy, and has been found nesting in Lombardy and the Venetian district; in Sicily it is resident throughout the year; and in Sardinia it is very abundant in winter.

Mr. C. A. Wright, who has sent specimens from Malta, says (Ibis, 1864, p. 143) that one "now and then hears of one being shot, and it is certainly a rare bird. One was killed at the Marsa in March 1859, another in the spring of 1860, and another in December following. Another was brought to me in October 1863." A specimen sent to me by Mr. Wright was killed in December 1871; and Captain Feilden informs me that one was killed on the 7th, a second on the 10th, and a third on the 27th March 1874, but that he has not observed it there during the autumn migration. I have specimens from Albania; and Lord Lilford writes (Ibis, 1860, p. 347) that it is "common in Epirus from October till May. Its abundance or scarcity seems to depend on the severity of the weather. I do not think the Bittern breeds in Epirus, at all events not in those parts of that province with which I have any acquaintance; but it is found throughout the year in some of the marshes of Albania and Dalmatia." Both Lindermayer and Von der Mühle speak of it as occurring in Greece; and the former says that it remains a few weeks during the spring passage, and passes north to breed, being rare on the autumn migration; but the latter states that it is resident in Greece. It is not uncommon in Southern Germany; and Dr. Anton Fritsch writes (J. f. O. 1871, p. 391) that it "breeds on the larger lakes of Bohemia, near Frauenberg and Kopidleno; in autumn it becomes numerous in some seasons." It is said to be numerous in the marshes near the Danube, especially in Hungary; and Messrs. Elwes and Buckley found it near Constantinople. Professor von Nordmann states that it is found all round the shores of the Black Sea, where it remains throughout the winter. Regarding its occurrence between here and North Africa I find but little on record, except that Canon Tristram met with it in Palestine; but it doubtless occurs in suitable localities. It is found in Africa, and, Captain Shelley writes (B. of Egypt, p. 271), is "very plentiful in Lower Egypt and the Fayoom, but less common in other parts of Egypt and Nubia." Petherick obtained it at Kordofan, and Lefebvre at Adowa in Abyssinia, in October. In North-west Africa it is, Loche writes, tolerably common, and some few remain throughout the year; and Mr. O. Salvin states (Ibis, 1859, p. 359) a few pairs inhabit the marsh of Zana, where they breed. It is also found as far south as the Cape colony. Mr. J. H. Gurney has kindly sent to me for examination a pair of Bitterns from the Transvaal, which I find absolutely identical with our European bird. Schlegel says (*l. c.*) that the South-African bird is smaller; but I have a female from Smyrna which is, if any thing, a trifle less than the female sent by Mr. Gurney. Mr. E. L. Layard, in his work on the birds of South Africa, says (p. 311) that "the Bittern is occasionally found in a few favoured localities, even in the neighbourhood of Capetown; and I am told it breeds in Verloren Vley. At Zoetendals Vley I found it in great abundance; and early in the morning, or during the evening twilight, their booming call resounded from every part of the lake. Mr. Hugo, of Fransch Hoek, brought me a pair of eggs, unfortunately both broken, which he states are of this bird." Mr. Godman records it from the Azores, where, he says, it inhabits the eastern and central groups; Mr. E. A. Zuchold speaks of it (J. f. O. 1855, p. 52) as being a migrant to Madeira; and Dr. C. Bolle (J. f. O. 1855, p. 176) states that it has been killed in the Canaries.

To the eastward it ranges as far as Japan. Mr. Blanford did not obtain it in Persia; but

Major St. John shot an immature bird in the marshes of Shiraz, and a second, in full plumage, near Tehrán. Dr. Jerdon writes (B. of India, ii. p. 757) that it is "found throughout Central and Northern India, but is rare or wanting in the south. I have known of its having been killed in the Deccan, and I have shot it in Central India and Bengal;" and Mr. A. O. Hume speaks of it as being very abundant in Upper Sindh. Severtzoff writes that it breeds in Turkestan, in the north-eastern, south-eastern, and north-western portions of the country, and is rare during winter in the north-western portion. It breeds to an altitude of about 1000 feet, and occurs during passage and in winter up to 3000 or 4000 feet above the sea-level. It inhabits Eastern Siberia, but is recorded by Dr. G. Radde as rare. He killed a female near Kulussutajeffsk on the 2nd May 1856; and one was brought to him at Tschita on the 5th May 1857. Dr. Taczanowski also writes (J. f. O. 1873, p. 106) that, according to Dr. Dybowski, it is rare in Dauria during migration, arriving about the middle of May, and breeds on the lakes near Gunka. Mr. Swinhoe says that it occurs throughout China; but Père David considers it uncommon at Pekin. Messrs. Temminck and Schlegel's collectors obtained it in Japan; and they say that their specimens are identical with the European bird.

In its habits the Bittern is a somewhat mysterious, peculiar bird, seldom seen during the day-time, unless suddenly surprised and driven from its hiding-place, where it rests at day, and only begins to move about as the dusk of the evening sets in. Reed-covered marshy localities are its favourite haunts, especially when the tract covered by these reeds is large and difficult of access; for there it can remain all day undisturbed. It never flies round during daylight of its own accord, and even when flushed flies off with a somewhat laboured flight, like an Owl in the sunshine, and drops again into the densest portion of the reed-thickets, where it is hard to put up again. Even when a dog is sent in to flush it, and the reeds are high and dense, it will climb up above the surface of the mud or water amongst the reeds, and trust thus to escape observation. It does not appear to pass the day in sleep; or at least it sleeps very lightly, as its call may at times be heard, and the rustling amongst the reeds and flags seems to indicate that it is moving about; but only after sunset does it appear to become more active and bestirs itself in search of food. Its position when seated amongst the reeds is peculiar, and I have more than once come across one sitting without at first realizing that it was not an old stump or a bundle of dried flags. Sometimes the feathers are as if drawn in; and as the bird sits with its head pointed upwards it is hard to believe that it can be a living bird. But it does not always look so peculiarly thin and stake-like; for when sitting at ease it frequently puffs the feathers out rather than draws them in; and although the neck is curved, as most of the Herons frequently hold it, yet the heavy feathering on the neck hides the contour and makes it appear as if it were a short, thick-necked bird; and should it suddenly stretch its neck, it shoots it out as if from a scabbard, and one cannot help being astonished at its great length so suddenly displayed.

When winged or wounded it is by no means an easy task to get hold of it; for it defends itself with great pluck and determination, throwing itself back and using bill and claws as weapons of defence, and I have seen a dog get considerably the worst of it in an attack on a wounded bird.

Its flight is soft and noiseless, like that of a great Owl; and when on the wing its neck is drawn in, and looks quite short, and its legs are stretched out behind the tail. It flies lazily,

the movements of the wings being slow and measured, unless it be suddenly roused from its hiding-place, when it flaps hastily up, but soon settles down again, dropping or throwing itself down amongst the reeds rather suddenly. When walking about, it moves quietly and sedately, stepping as if every step were carefully considered; and it never appears to run. Its long toes are admirably adapted for walking amongst the mud, or moving and climbing through the dense reed-growth; and it is able to travel considerable distances without descending to the surface of the water in localities where there is a dense growth of reeds or flags in shallow water. It is not a very long-legged bird, and cannot wade in any but very shallow water; for it rarely immerses any portion of the tibia. Unneighbourly and suspicious in its bearing toward others of its own species, as well as to other birds which may be found in the vicinity of the place it inhabits, one rarely finds more than one pair, except on a larger pond or marsh, where there is plenty of room for several couples to live without coming in the way of each other.

The usual call-note of the Bittern is a clear loud croak, not unlike that of the Night-Heron, and may be heard at night at a great distance. So far as I can make out, it appears to utter this call only when on the wing. But the cry or call of this bird which is best known is that peculiar booming sound uttered by the male bird during the pairing-season. This note, though doubtless it sounds as sweet and soft in the ears of the female as the cooing of the Turtledove does to its mate, is certainly, so far as I can judge, any thing but a musical or pleasant sound; and in the dusk of the evening, when one is alone passing along the edge of a marsh, the distant booming of the Bittern sounds peculiarly uncanny, and one can scarcely wonder at the illiterate peasant who imagines that the morass is haunted by some howling demon when he hears the deep note of the Bittern. I have never heard the booming of this bird near; and it is most difficult to approach within any thing like a reasonable distance without the bird stopping his unearthly roar, which consists of two syllables—one a short one as it draws in the air, and the other a longer and louder one as it is again expelled. The booming is most like the deep-toned bellowing of a bull, heard at some distance, but is so loud that one cannot imagine how the bird is able to produce it. In the early spring, when pairing, the booming of the Bittern is heard continually during the night; but when the young are hatched it is gradually discontinued.

The food of this bird consists of small fish, water-beetles of various sorts, worms, small crustaceans, frogs, and small mammals such as field-mice; and it would seem that fish constitute their chief article of food; for one finds these more often in the stomach than any thing else.

The nesting-place is usually chosen in a locality least frequented by human beings, and where the bird is unlikely to be molested; and should a pair find that the place selected is quiet and they have not been disturbed, they are almost sure to return thither the next spring. A dense forest of reeds in the middle of an almost inaccessible morass is a place frequently selected; but in localities where the bird is not rare, the nesting-places are not unfrequently the reedy portions of secluded ponds. The nest itself is a very careless structure, larger or smaller according to the place where it is built—usually consisting merely of a collection of the blades of dried flags and reeds heaped or partly woven together so as to form a convenient bed for the eggs. It is generally placed amongst the old trodden-down reeds or flags, but occasionally on a

small lump forming a diminutive island, and almost always amongst the densest growth of reeds. The eggs, from three to four (seldom as many as five) in number, are uniform brownish olive, more olive-green in tinge when fresh, and becoming much browner when blown and kept for a time. I possess eggs from Holland which in size average $2\frac{2}{40}$ by $1\frac{1}{2}$ inch.

The specimen figured is a fine adult male from Holland, purchased in the flesh in Leadenhall Market, and is in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂. Holland, purchased in Leadenhall Market (*H. E. D.*). *b*, ♂ *ad.*, *c*, *juv.* Albania (*Hanbury Barclay*). *d*. Seville, Spain (*Llanos*). *e*, ♀. Smyrna, January 15th, 1872 (*Dr. Krüper*).

E Mus. J. H. Gurney.

a, ♂, *b*, ♀. Transvaal, South Africa, May 30th, 1872 (*Ayres*).

E Mus. C. A. Wright.

a. Malta, December 1871 (*C. A. W.*).

E Mus. Howard Saunders.

a, ♀. Near Seville, April 10th, 1869.



AMERICAN BITTERN.

BOTAURUS LENTIGINOSUS

BOTAURUS LENTIGINOSUS.

(AMERICAN BITTERN.)

The Bittern from Hudson's Bay, Edw. Nat. Hist. B. iii. p. 136, pl. 136 (1750).
Ardea botaurus freti hudsonis, Briss. Orn. v. p. 450 (1760).
Ardea stellaris, var., Forst. Phil. Trans. lxii. p. 410 (1772).
Ardea stellaris, var. β, Gmel. Syst. Nat. i. p. 636 (1788).
Ardea lentiginosa, Mont. Orn. Dict. Suppl. & pl. (1813).
Ardea minor, Wils. Am. Orn. viii. p. 35, pl. 65. fig. 3 (1814).
Ardea mokoho, Vieill. Nouv. Dict. xiv. p. 440 (1817).
Botaurus lentiginosus (Mont.), Steph. in Shaw's Gen. Zool. xi. p. 596 (1819).
Ardea hudsonias, Merr. in Ersch & Grub. Encycl. v. p. 175 (1820).
Botaurus minor (Wils.), Boie, Isis, 1826, p. 979.
Butor americana, Swains. Classif. of B. ii. p. 354 (1837).
Butor lentiginosus (Mont.), Jard. Brit. B. iii. p. 147 (1842).
Botaurus adspersus, Licht. Nomencl. Av. p. 89 (1854).
Ardea freti-hudsonis, Schlegel, Mus. Pays-Bas, *Ardea*, p. 49 (1863).
Botaurus mugitans, Coues, Proc. Ac. Nat. Sc. Phil. 1875, p. 353.

Figuræ notabiles.

Edwards, *l. c.*; Gould, B. of Eur. pl. 281; id. B. of G. Brit. iv. pl. 27; Audub. B. of Am. pl. 365; Wilson, Am. Orn. pl. 65. fig. 3.

Ad. pileo rufescenti-fusco, nigro-fusco notato: suprà rufescenti-fuscus nigro-fusco et ochraceo-cervino variegatus et vermiculatus: uropygio et supracaudalibus magis rufescentibus: caudâ fuscâ rufescenti marmoratâ: remigibus primariis nigro-fuscis, secundariis castaneo terminatis nigricanti marmoratis: mento et gulâ cervino-albis, centraliter lineâ fuscâ notatis: striâ magnâ nigrâ utrinque in colli lateribus: gutture et corpore subtùs cervinis, plumis centraliter striâ magnâ fuscâ variegatâ notatis: abdomine imo et subcaudalibus rufescenti-cervinis: rostro nigro-fusco, subtùs et ad basin viridi-flavo: loris nudis viridi-flavis: iride aurantiacâ: pedibus griseo virescentibus.

Adult Male (New Brunswick, 18th April). Crown and nape reddish brown, marked with blackish brown, becoming greyer on the hind neck; upper parts generally dark reddish brown, variegated and vermiculated with buffy yellow and blackish brown; rump and upper tail-coverts more reddish in tinge; tail warm brown, slightly marbled with reddish; primaries uniform blackish brown, some slightly tinged with chestnut at the tip, secondaries broadly tipped with chestnut-red, marbled with blackish; wing-coverts brownish yellow, marbled and vermiculated with blackish; throat buffy white, with a central brown line; a broad black line runs from the gape down the sides of the neck: underparts buff, the elongated pectoral feathers with a broad variegated brown centre, forming a broad stripe, these stripes being less distinct on the rest of the underparts; flanks variegated with dark brown; under tail-coverts and thighs warm creamy buff; bill above and at the tip brownish black, but greenish yellow at the

base; bare space round the eye greenish yellow; iris reddish yellow; legs greyish green. Total length about 27 inches, culmen 3·22, gape 3·95, wing 11·5, tail 4·5, tarsus 3·85.

Adult Female. Differs from the male only in being rather smaller in size, and a little duller in the markings of the plumage.

It is somewhat remarkable that this bird, an inhabitant of North America, should have been met with so often in Great Britain; for it is by no means a bird that one would expect to cross the Atlantic. Still there can be no doubt that it has been obtained here on several occasions; and it is curious that it was first described by Montagu from a specimen shot in England, at Piddletown, in Dorsetshire, in 1804. Since then the following occurrences have been recorded, viz.:—One at Mothecombe, near Plymouth, 22nd December 1829 (Moore, Mag. Nat. Hist. x. p. 320); one said in a letter from Mr. J. R. Wallace, of Douglas, Isle of Man, to Yarrell (Brit. B. 3rd ed. ii. p. 578), to have been killed there "very recently;" one shot in Dumfriesshire, near Sir William Jardine's residence, late in October 1844, and preserved in his collection. Yarrell (*op. cit.* p. 578) states that one was killed at Fleetwood, in Lancashire; and he also refers to one recorded as having been killed near Yarmouth; but Mr. Stevenson (B. of Norf. ii. p. 174) points out that this occurrence cannot be depended on. Thompson states (B. of Irel. ii. p. 168) that one, now in the Belfast Museum, was obtained near Armagh on the 12th November 1845. Mr. Gurney (Zool. 1866, p. 145) says that he examined one in the flesh procured in Anglesea in December 1851; and he also identifies one killed at Canterbury. According to Mr. Robert Gray (B. of W. of Scotl. p. 280), one was shot by Colonel William Fraser in November 1854, near the Bridge of Don, on the estate of Balgownie, in Aberdeenshire; one at Latherow-Wheel, Caithness, in the autumn of 1862; and one (recorded in the Field of 4th March 1871) was shot near the Compensation Pond, in the Pentland Hills, Mid Lothian, by John Kinkell, gamekeeper to Charles Cowan, Esq., of Logan House, about ten years previously. Mr. Dutton (Zool. 1868, p. 1098) records one, in the collection of Sir John Crewe, as having been killed in the Pevensey Marshes, Sussex, on the 26th November 1867; Lord Clermont (Zool. 1869, p. 1517) cites the occurrence of one near Dundalk, co. Louth, on the 18th November 1868; one, in the collection of Mr. Cecil Smith, was obtained in Guernsey on the 27th October 1870; and, according to Mr. Blake-Knox (Zool. 1870, p. 2408), one was procured at Cahir, co. Galway, on the 31st October 1870. So far as I can ascertain, it does not appear to have been met with on the continent of Europe; for, though it is said to have been obtained near Leipzig, I do not find any evidence confirmatory of this statement.

In America the present species is very generally distributed from about 58° N. lat. down to Guatemala. Dr. Coues states:—"It is migratory, and its movements are regular. Excepting the Great Blue Heron, no bird of its tribe in this country is so extensively dispersed. It reaches the Northern States in March or early in April, and may pass still further north. I ascertained its occurrence at Rigolet, in Labrador; and it is stated to reach 58° or 60° in the interior. It reaches across our continent. To the south its movements extend to Guatemala, although it winters in the Southern States as well, and also, I am inclined to think, even in the Middle States, as I have procured it in January at Washington. It visits some of the West-Indian Islands. In September I found it migratory through Dakota in comparative plenty. It may

breed in almost any portion of its range, but nests preferably towards the north." To this I may add that I found it common and resident in Texas. It occurs also in Mexico; and Mr. Salvin records it (Ibis, 1860, p. 194) from Vera Paz and (Ibis, 1866, p. 196) from Dueñas and Coban, in Guatemala. According to Mr. E. von Martens (J. f. O. 1859, p. 219) it is to be met with in Bermuda "in every swamp from October to December, and occasionally as late as March;" Albrecht records it from Jamaica; and Dr. Gundlach says (J. f. O. 1856, p. 346) that it is "not uncommon in Cuba from October to April, but never remains there to breed."

In habits the present species much resembles our common European Bittern. Like that bird it is a shy, solitary species, whose habits are not easy to observe. I not unfrequently met with it in New Brunswick, where I used to find it on the swampy margins of the small lakes far in the forests; but I never saw more than one or two on the same lake. I have usually flushed them when tramping through the reeds, when they rise heavily and flap off as quickly as they can. Once only, as I was creeping cautiously along in quest of a Duck I had caught sight of on the water, do I recollect seeing one standing motionless as if asleep, apparently not having perceived me; but the next moment he started off uttering a loud croak of surprise. The best account of its habits I have read is that by Dr. Elliott Coues (B. of N.W. p. 527), which I transcribe as follows:—"This Bittern, as has been said, is essentially 'wild, shy, and solitary.' We oftener start one from his lonely vigils in the bog, than find several or even a pair together, excepting in the breeding-season. No doubt he enjoys life after his own fashion; but his notions of happiness are peculiar. He prefers solitude, and leads the eccentric life of a recluse, 'forgetting the world, and by the world forgot.' To see him at his ordinary occupation, one might fancy him shouldering some heavy responsibility, oppressed with a secret, or labouring in the solution of a problem of vital consequence. He stands motionless, with his head drawn in upon his shoulders, and half-closed eyes, in profound meditation, or steps about in a devious way, with an absent-minded air; for greater seclusion, he will even hide in a thick brush-clump for hours together. Startled in his retreat whilst his thinking-cap is on, he seems dazed, like one suddenly aroused from a deep sleep; but as soon as he collects his wits, remembering unpleasantly that the outside world exists, he shows common sense enough to beat a hasty retreat from a scene of altogether too much action for him. Some such traits have doubtless led to the belief that he is chiefly a nocturnal bird; but such is not the case. He may migrate by night; but so does the Killdeer, and the Bobolink, and many other birds not in the least nocturnal. Nor is the Bittern either lazy or stupid, as some may suppose. He is simply what we call a shady character—one of those non-committal creatures whom we may invest, if we please, with various attributes, and perhaps consider very deep, without sufficient reason—the fact being that we make the mystery about him. There is nothing remarkable in the fact that he prefers his own company and dislikes to be bored. He lives in the bog, where he finds plenty to eat that he likes best, and is satisfied to be simply let alone.

"When the Bittern is disturbed at his meditation, he gives a vigorous spring, croaks at the moment in a manner highly expressive of his disgust, and flies off as fast as he can, though in rather a loose, lumbering way. For some distance he flaps heavily with dangling legs and outstretched neck; but when settled on his course he proceeds more smoothly, with regularly measured wing-beats, the head drawn in closely, and the legs stretched straight out behind

together, like a rudder. He is very easily shot on the wing—easily hit, and dropping at a touch even of fine shot. When winged, he croaks painfully as he drops, and no sooner does he touch the ground than he gathers himself in defensive attitude to resent aggression as best he can. He fights well, and with more spirit and determination than he might be expected to show—like many other quiet inoffensive creatures when quite sure they have a grievance and are pushed to desperation. He has a very ugly way of pointing his resistance with quick thrusts of his spear-like bill, capable of inflicting no slight wound on an incautious hand. But it avails little; a kick from a cowhide boot, or a thump with the butt of a gun, generally decides the unequal contest.

"The food of this bird consists of various kinds of small aquatic animals. In its stomach may be found different molluscs, crawfish, frogs, lizards, small snakes and fishes, as well as insects. Such prey is captured, with great address, by spearing as the bird walks or wades stealthily along. The thrust of the bill is marvellously quick and skilful; more action is displayed on such occasions than probably under any other circumstance. As an article of food itself, the Bittern is not a success, notwithstanding eminent authority to the contrary. I have several times seen it brought to table under favourable culinary circumstances; but in each instance it furnished occasion for a joke at some one's expense, as little relished, apparently, as the meat itself."

As regards what Dr. Coues says as to its edible qualities I can scarcely agree with him; for I have often found a grilled Bittern a very welcome addition to our meal in the backwoods, and, whether it was that I had got tired of pork and molasses, or that hunger proved such an effective sauce, or that our camp cook understood how to make them palatable, I can say that I have enjoyed a meal off Bittern and cakes baked before a wood fire almost as much as I have a lunch in a good Paris restaurant.

The call of the American Bittern differs a good deal from that of *Botaurus stellaris*. Dr. Coues says:—"The curious noise is spoken of in Audubon as a 'hoarse croaking, as if the throat were filled with water;' Nuttall makes a successful attempt to suggest the sound by the syllables '*pump-aŭ-gah*;' but I prefer, on the whole, Mr. Samuels' rendering. 'In the mating-season,' he says, 'and during the first part of the period of incubation, the male has a peculiar love-note, that almost exactly resembles the stroke of a mallet on a stake—something like the syllables *chunk-a-lunk-chunk*, *quank chunk-a-lunk-chunk*. I have often, when in the forests of Northern Maine, been deceived by this note into believing that some woodsman or settler was in my neighbourhood, and discovered my mistake only after toiling through swamp and morass for perhaps half a mile.' Besides this peculiar call-note, the bird has another, its ordinary cry, when its breast is not in the least swelling with the tender passion. This is a single, abrupt, explosive syllable, something like *quark* or *hauk*, delivered with a rough, guttural intonation. It is always uttered when the bird is surprised while feeding, or when its haunts are invaded. As it lives so much among reeds and rushes, very often the first intimation one has of its presence is the energetic utterance of this note, to be followed in an instant by the heavy form of the bird itself as it tops the tall reeds. Ordinarily, however, the Bittern is decidedly a silent bird, as it were mistrusting its vocal ability; besides, noisiness is not altogether compatible with its sedate ways and contemplative turn of mind.

"We might expect to find in the wind-pipe some peculiarity to account for such vocal efforts. In such instances as those of the Trumpeter Swan and Whooping Crane the remarkable notes emitted depend evidently upon the peculiarly convoluted structure of the trachea. But ordinarily, little connexion can be traced between quality of voice and tracheal structure. The curious cartilaginous or osseous bulbs at the lower larynx of most Ducks seem to have no influence on the voice. Who would suspect the marvellous musical ability of a Mocking Bird from comparison of its vocal organ with that of a Crow, for instance? a bird which, anatomically considered, is truly oscine, for all that its croak is so harsh. The conformation of the Bittern's windpipe is not remarkable, according to descriptions; there is no dilatation into a membranous or gristly tympanum, nor any convolution; nor is the muscular arrangement remarkable. The calibre of the tube is perhaps greater, proportionally, than is usual in Herons, with laterally compressed walls, narrow rings, and wide spaces; but, for all that we can discover by examination of the organs, the voice of the Bittern is likely to remain its own secret."

The nest of the Bittern is placed on the ground, on a tuft of grass, or under a bush in a swampy locality. Mr. Samuels says that it breeds in communities; but Mr. Endicott doubts this, and says, (according to his experience) "one pair of Bitterns to a bog seems to be the rule. In a place where I have found them there is retired feeding-ground for a thousand—dense cedar swamps extensive enough for as many nests if they only chose to congregate like their sociable cousins the Herons; and yet two by two they live, their next neighbours nobody knows how far away—not in the same swamp at any rate; and on the ground, the bare ground, they lay their four or five eggs, among low laurel, tufts of grass, or, as in the case of the first nest I ever found, at the foot of a swamp-huckleberry." Judging from my own experience, I certainly can indorse this statement of Mr. Endicott; and the lumbermen amongst whom I spent two seasons in New Brunswick, several of whom I found to be tolerably accurate observers, all assured me that this Bittern does not breed in communities, but singly.

Eggs of the American Bittern in my collection, from New Brunswick and Maine, closely assimilate with those of *Botaurus stellaris* in shape and coloration, but are smaller in size, averaging only about $2\frac{2}{40}$ by $1\frac{18}{40}$ inch.

Dr. Coues (*l. c.*) is inclined to adopt a name hitherto unknown for the present species, viz. that given by Bartram in 1791; but I cannot at all agree in the propriety of discarding an old and well-known name in favour of one which is, to say the least of it, doubtful. Bartram gives merely a list of the birds met with in his travels, and at p. 293 (no. 138) he includes *Ardea mugitans*, calling it also "Bitern or Indian Hen," but giving no description whatever. Under these circumstances I prefer to use Montagu's name *lentiginosus*; for this author gives both a good description and a plate.

The specimen figured is the one above described, and was shot by myself at Musquash, New Brunswick.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Mace's Bay, New Brunswick, April 16th, 1862 (*H. E. D.*). *b*, ♂. Bullen Marsh, Musquash, N. B., April 18th, 1862 (*H. E. D.*). *c*. Calais, Maine, U. S., 1863 (*G. A. Boardman*).

Family CICONIIDÆ.

Genus CICONIA.

Ciconia, Brisson, Orn. v. p. 361 (1760).
Ardea apud Linnæus, Syst. Nat. i. p. 235 (1766).
Melanopelargus apud Reichenbach, Syst. Av. v. p. 165 (1850).

The Storks inhabit the Palæarctic, Ethiopian, Oriental, Australian, and Neotropical Regions, two species being resident in the Western Palæarctic Region. *Ciconia abdimii*, Licht., is said to have been obtained in Spain; for Mr. Saunders states that there is a good description of one, killed near Granada on the 18th June 1858, in Don Victor Seoane's 'Catalogo de las Aves observadas in Andalucia.' But the specimen does not seem to be forthcoming, if in existence; I therefore think it premature to admit that species into the European list.

The Storks frequent, as a rule, marshy places, but are also found in meadows and cultivated ground near water; and one of our European species evinces a great partiality for inhabited districts, and appears to be fond of placing its nest on houses, even in towns. Although tame and confiding to a degree where they are not molested, they are shy enough when in the marshes away from habitations; and the Black Stork, which frequents wilder and uninhabited places, is sufficiently wary. They walk with ease, often wading far into the water in search of food; and their flight, though rather heavy, is strong and tolerably swift. They feed on reptiles, fish, insects, and small mammals, and are said to devour poisonous snakes. They place their nests, which are large, bulky structures of sticks lined with grass, straw, &c., on a building, or else on a tree or in a cave; and their eggs, from three to five in number, are pure white.

Ciconia alba, the type of the genus, has the bill much longer than the head, stout, straight, conical, tapering to a point; gape-line straight, commencing below the eyes; nostrils elongated, oval; a small space round the eye bare; wings long, full, the first quill rather short, the third longest; inner secondaries nearly as long as the primaries; tail short, slightly rounded; legs long, slender, tibia bare on the lower half, reticulated, tarsus reticulated all round; toes moderate, hind toe rather short, anterior toes webbed and reticulate at the base, elsewhere scutellate; claws short, obtuse; plumage compact, moderately full.



WHITE STORK.

CICONIA ALBA

CICONIA ALBA.

(WHITE STORK.)

Ardea ciconia, Linn. Syst. Nat. i. p. 235 (1766).
Le Cigogne, Buff. Ois. viii. p. 117 (1783).
Ciconia alba, Bechst. Naturg. Deutschl. iii. p. 41 (1793).
Ciconia albescens, Brehm, Vög. Deutschl. p. 574 (1831).
Ciconia nivea, Brehm, tom. cit. p. 574 (1831).
Ciconia candida, Brehm, tom. cit. p. 575 (1831).
Ciconia major, Brehm, Naumannia, 1855, p. 289.

Cigogne, French; *Cigueña*, Spanish; *Cegonha*, Portuguese; *Cicogna*, Italian; *Storch*, German; *Stork*, Danish and Swedish; *Bocian*, Polish; *Aist*, Russian; *Leglek*, Tartar; *Belaredj*, *Bou-laklak*, *Bouchekchack*, Arabic.

Figuræ notabiles.

Buff. Pl. Enl. pl. 866; Werner, Atlas, *Coureurs*, pl. 20; Naumann, Vög. Deutschl. pl. 228. figs. 1 & 2; Zool. Gart. 1864, pl. 399 (nestling); Gould, B. of Eur. pl. 283; Sundevall, Svensk. Fogl. pl. 47. fig. 1; Frisch, Vög. Eur. pl. 41. fig. 3.

Ad. albus: remigibus, tectricibus alarum majoribus scapularibusque nigerrimis: regione ophthalmicâ mentoque nudis, illâ nigrâ, hôc rubro, ad basin rostri nigro: rostro pedibusque rubris: iride brunneâ.

Juv. adulto similis, sed rostro nigricante, pedibus saturatè rubris.

Adult Male. Pure white, excepting the quills, scapulars, and larger wing-coverts, which are glossy black; secondaries washed with grey on the outer web; bare skin round the eye black; chin naked, in colour reddish, but black at the immediate base of the bill; beak and legs coral-red; iris brown. Total length 40 inches, culmen 7·0, wing 22·5, tail 9·0, tarsus 8·9.

Female. Differs from the male merely in being somewhat smaller in size.

Young. Similar to the adult bird, but has the beak blackish and the legs dull reddish.

The White Stork inhabits Central and Southern Europe and Africa, and is met with in Persia, India, and Japan. It but rarely visits our islands, at irregular periods, those occurring here being probably stragglers driven to us through stress of weather. Yarrell writes that "Dr. Edward Moore, on the authority of Mr. Gosling, says that three birds have been obtained in Devonshire. One was killed in Hampshire in 1808, by the gamekeeper of John Guitton, Esq., of Little Park, near Wickham. One has been killed near Salisbury. One bird, out of a flock of four, was shot in Oxfordshire. Two have been killed in Kent; one of them in Romney Marsh, the second near

Sandwich. One was killed near Mildenhall, in Suffolk, in 1830. I learn from Frederick Holme, Esq., that a flock of four or five White Storks haunted the pools of Kedby Common, in the East Riding of Yorkshire, for some time in the spring of 1830, and one of them was shot." Yarrell further enumerates two other instances of its occurrence, one of which is given by Mr. Stevenson.

Mr. Stevenson has, in his 'Birds of Norfolk,' published a most careful account of the occurrence of this species in Norfolk, which I copy as follows:—"'Ciconia raro huc advolat,' wrote Sir Thomas Browne in a letter to Dr. Merrett, in 1668, quoting, indeed, the latter's own words, but adding, 'I have seen two in a watery marsh, eight miles off [Norwich]; another shot, whose case is yet to be seen.' Again in his 'Account of birds found in Norfolk,' he speaks of having seen the '*Ciconia*, or Stork, in the fens; and some have been shot in the marshes between this [Norwich] and Yarmouth;' whilst Willughby, in his 'Ornithology,' expresses his obligation to his 'honoured friend,' Sir Thomas, for 'a picture of one of these birds, taken on the coast of Norfolk, drawn by the life, with a short description of it,' which specimen, in confinement, 'readily ate frogs and land-snails, but refused toads.' Turner years before (1544) had stated 'Ciconia, ut Germanis auis est notissima, ita Britannis meis plerisque omnibus tam ignota est, quàm quæ omnium ignotissima. Nec mirum, quum nusquam in insula nostra nisi captiua Ciconia uideatur;' in Johnston, whose work bears a figure of this bird on its frontispiece, with the motto '*Pietas contenta lucrata*,' bore witness to the same, saying Storks 'in Britannia ignotas esse.' Ray, too, in his 'Synopsis' (1713), asserts that the species 'In littoribus nostris interdum sed rariùs cernitur; apud nos non nidificat' (p. 97). Still, notwithstanding these old records, so fortunately preserved to us, I see no reason to suppose that, as an accidental visitant, the Stork was less frequently met with on our coast at that time than it is now, although fewer examples fell victims to their too confiding nature, and many, most probably, passed wholly unnoticed. It must, however, be always borne in mind that the Stork was but a stranger in the land, and not an inhabitant as were the Crane and Spoonbill.

"Going back to the commencement of the present century, we have ample evidence of its appearance in this country, year after year, on its migratory course; and more recent observations entirely confirm the statement of Messrs. Gurney and Fisher, in 1846, that 'one or two of these birds are generally seen in Norfolk every year, generally during the spring months, and in the vicinity of the eastern coast.' Now and then, however, a specimen is met with far inland, either storm-driven, or, more often, seeking in vain to escape persecution. In Sir William Hooker's MS. I find the following important notes, which are, in many points, confirmed by the Messrs. Paget:—'A Stork seen about Yarmouth by Mr. Penrice and Mr. Bonfellow in the autumn of 1810; a pair seen at Burgh Castle during the months of May and June 1817, and at length shot in the beginning of July; another before that time shot at Caister; and one killed in Norfolk, May 6th, 1818, now in the possession of Mr. T. Hunt, of Norwich.' Of more recent date, there is a record in Mr. Lombe's notes, of one killed near Holt, in 1836; Mr. Lubbock mentions one killed at Wretham, in 1838; and an adult bird in the Norwich Museum (No. 211 *a*) was shot near Yarmouth in 1842. Of this latter specimen I find the following interesting description in the 'Zoologist' for 1843 (p. 182), from the pen of Mr. W. R. Fisher (then residing at Yarmouth):—'As I was walking on the beach, on the morning of the 10th of May last, I observed a bird of

this species coming over from seawards. When it first came over the shore, it was flying so low that I could plainly distinguish its long legs stretched out behind, like those of the Heron, the black bar across the wings, formed by the quill-feathers and wing-coverts, contrasting strongly with the pure white of the rest of the plumage. I watched it for some minutes as, after taking two or three turns over the houses, it slowly soared to an immense height, and then went steadily off in a south-westerly direction. It was shot next day, six miles from Yarmouth'—at Halvergate, as Mr. Fisher subsequently informed Mr. Yarrell. In Mr. Dowell's notes I find two records of Storks observed at Salthouse, one purchased by Mr. J. H. Gurney several years ago, but not now in his collection (though he still possessed a more recent specimen killed on Breydon), and another seen in the Cley marshes, in the summer of 1849, within shot of the Salthouse bank.

"On the 7th of June, 1848, an adult female, now in the possession of the Rev. H. T. Frere, of Burston, was shot on Breydon, as noticed by Messrs. Gurney and Fisher in the 'Zoologist' (p. 2291). In 1852, Mr. L. H. Irby recorded in the same journal (p. 3476) the occurrence of an adult male on Breydon, about the 15th of March (now in Major Irby's possession); and in February of the same year an immature specimen, also killed near Yarmouth, was sent up to Norwich for preservation. This bird had evidently received a previous wound, from the effects of which it had been gradually wasting, and was thus happily destroyed. A second example in the Norwich Museum (No. 211), in adult plumage, was procured at Brooke, near Norwich, in August 1858.

"On the 3rd of October, 1855, whilst travelling by an early train on the Great Eastern Railway, I saw one of these birds in a low meadow, at Lakenham, near Norwich, not far from the line, and, as long as I could observe it, perfectly undisturbed by the passing carriages. It was standing apparently in a little watercourse, as I could see only part of its legs, with its head and neck thrown back, and its red beak resting on its breast in the most perfect repose; whilst the marked contrast of the black wing-feathers to the pure white of the rest of the plumage was strikingly visible in the morning sun.

"On the 14th of September, 1856, a very fine Stork was seen on the farm of Mr. Sewell, of North Pickenham, near Swaffham, from whence it flew into some low grounds belonging to Mr. R. Hall Say. Mr. Say's keeper went in pursuit, and succeeded in shooting it in a long plantation belonging to that gentleman.

"In 1858 a fine specimen, now in the collection of the Rev. C. J. Lucas, and formerly in that of Mr. A. F. Sealy, was shot at Yarmouth, and was purchased by the latter gentleman in the flesh.

"On the 29th of November, 1860, an adult female was killed at Hickling, which, like the one in 1852, had suffered greatly from a previous wound, as shown by its soiled plumage and poor condition.

"About the 17th of May, 1861, an adult female was shot on the late Mr. Cator's estate at Woodbastwick, and is still, I believe, preserved at the hall. This bird contained an egg quite ready for exclusion, which was only slightly cracked on one side by the fall of the bird.

"And last on the list to the present time is an adult bird, in Mr. Overend's collection at Yarmouth, which, as stated in the 'Field' (vol. xxv. p. 384), was killed on the 24th of May, 1865, in some marshes at Oby, about seven miles from the coast."

Mr. Cordeaux, in his useful little work the 'Birds of the Humber District,' states that "a White Stork (now, as Mr. Richardson, of Beverley, informs me, in the possession of Mr. P. Lawton, innkeeper, Easington) was shot near Withernsea, on the coast of Holderness, by a man named Crawforth, early in September 1869;" but this species is very rare in the north of England or Scotland. Macgillivray states that he only knew of one Scotch-killed Stork, a specimen having been shot in Mainland, Shetland, and subsequently deposited in the University Museum at Edinburgh; but he further writes that "the Rev. Mr. Smith, Monguhitter, informs me that 'during the unusually severe winter of 1837–38, a specimen of this rare bird was shot in a moss in the upper part of the parish of Lomnay. It was nailed to a barn-door, where it speedily went to decay. The people who obtained it compared its red legs to Turkey leather.'" Mr. Robert Gray, who says that he knows of no instance of its occurrence in Western Scotland, writes that "in the statistical account of the parish of Craig, in Forfarshire, prepared by the late Mr. Thomas Mollison, Montrose, and published in 1835, it is stated that a Stork had been seen a short time previously near that town, and was afterwards shot at Ethie House. In addition to this instance, I have to record the occurrence of a very fine specimen which was shot near St. Abb's Head, Berwickshire, in 1848, by a fisherman, who gave it to Mr. William Paterson, of North Berwick. This bird is still carefully preserved in that gentleman's collection. I saw it shortly after its capture, and have since seen it when visiting Mr. Paterson in company with Dr. Turnbull, who takes notice of the specimen in his little work on the birds of East Lothian."

It has only once been recorded from Ireland. In the Ann. Nat. Hist. July 1846 (p. 70, vol. xviii.), is a letter from "J. R. Harvey, M.D.," who states as follows:—"A fine specimen of the Stork (*Ciconia alba*, Ray) was shot a few weeks since near Fermoy, in the county of Cork. It appears that three individuals were seen; but this only was procured. It is now in the possession of the Rev. Mr. Bradshaw, of this city (Cork). I am not aware of any authentic record of the species having been met with in Ireland before."

It does not appear to have occurred in Iceland or on the Færoes, and in Norway it is only met with as a straggler; and, according to Mr. Collett, stray flocks of four or five individuals visit that country almost every year, but never remain to breed; indeed they are generally killed, because they are rare. They are generally met with in Southern Norway as far north as Bergen, and but rarely occur in the interior. Nilsson states that "it is tolerably numerous in Southern Sweden, and is found more especially in some of the wooded districts, as, for instance, in a wood near Skabersjö, and a still larger colony inhabit a wood near Örup, in Benestads parish. In the west it occurs near Falkenberg, in Halland: to the eastward it rarely breeds higher than Skåne; but now and then a straggler is met with higher to the north, and it has been seen even as far as Upland. It arrives in Skåne early in April, and leaves again late in August.

In Finland it is rare, but has occurred there on several occasions. Von Nordmann records one occurrence near Borgå; and Nilsson states that it has been met with as far north as at Torneå; but Professor Malmgren writes to me that this is not the case, as, owing to a misprint, Torneå was put instead of Upsala. In Northern Russia it is rare; but, according to Sabanäeff, "it occurs in the Governments of Moscow and Jaroslaf, though Bogdanoff does not record it from the Volga. Middendorff, however, states that it is found on the Kama to $59\frac{1}{2}^{\circ}$ N. lat." Mr. Taczanowski writes that "it is common throughout the whole of Poland, but is more numerous on the right

shore of the Vistula. There are localities in this country where one or two Stork's nests are seen on every building, besides several on the neighbouring trees. Fifteen years ago the Storks must have met with a catastrophe during their passage, as they returned very much diminished in numbers, since when they have been considerably less numerous than previously. The periods of their migrations are very regular. The first arrive generally between the 19th and 25th of March; and in a few days all the pairs are at their nests. The 26th of August is about the time when they usually leave the country, after having congregated in enormous bands; but they do not long remain thus, as the isolated adult individuals come and collect the young together and conduct them away. The Stork is not found in the eastern parts of European Russia; but the exact limits of its range are not yet precisely ascertained. According to Professor Kessler it is common in the districts of Kieff, and it is found in all parts of that Government, though considerably more numerous in the southern part, and rarer as one advances towards the north. They are most numerous in the Government of Podolsk." In the Baltic Provinces and throughout Northern Germany the Stork is everywhere to be met with during the summer season, there, as elsewhere, breeding in the villages, and building its huge nest on the houses or the roofs of the farm-buildings. In Denmark, Mr. Benzon informs me, the Stork is "met with everywhere, but is not so common now, since so many of the morasses are drained, as it used to be. It arrives early in March or from then to April, or, when the weather is unfavourable, not until the latter end of April; thus the dates of its arrival may vary as much as thirty days. I have never known it to arrive before the 8th of March, on which date, in 1871, it appeared on Hadsten Enge, near Aarhus, on Jutland; and the latest date of its arrival that I have on record is the 25th of April. The average date of its arrival is about the 3rd of April, during an average temperature of 2·7° Cent. In the Duchies it is seen somewhat earlier; and, according to Boje, is said to arrive from the 19th of February to the 9th of April; and in Belgium it arrives from the 17th of February to the 28th of March, the average temperature being 2·4° Cent. It leaves Denmark late in August; and only in case of a late brood do a pair or two remain as late as the middle of September. Males and females appear to migrate separately, as the former arrive about a week before the latter, in order to take possession of their old nest or seek for a suitable spot for the purpose of nidification; and in so doing the males often fight with such fierceness as to result in the death of one or the other of the combatants." In Holland and Belgium it is also tolerably numerous, arriving in February and March and leaving again in August; but, according to Degland and Gerbe, it is now merely a bird of passage in France—which is not to be wondered at, seeing that upwards of forty are recorded as having been killed in September 1833, between Gorze and Rezonville, and similar massacres would appear to have taken place in Champagne. It formerly nested at Valenciennes, Douai, Cambrai, Bergues, and other places in the north of France; but having been persecuted, they have not returned for many years. In Alsace and Lorraine, however, it would appear to better treated, and some remain to breed. De Selys states that it passes through Belgium in April and at the end of August, but does not nest there. In Savoy it is also a bird of passage in April and in early autumn, when according to Bailly, the young are so much fatigued that they are slaughtered by wholesale—some gallant sportsmen actually bagging six or eight at a shot, and winding up by knocking them down with sticks. Under these circumstances there may be a lurking sarcasm in the statement that "their

stay in Savoy is but very short." Professor Barboza du Bocage includes it in his list of the birds of Portugal; and the various writers on the ornithology of Spain speak of it as common in that country. Lord Lilford saw numbers near Segovia. Major Irby records it as abundant near Seville, arriving in February and leaving in October; and Mr. Howard Saunders, in his paper on the birds of Southern Spain, gives this bird as "abundant throughout the country, breeding in the towers and belfries of the churches of the towns and cities, and on the 'almihares' or stacks of the farmhouses. The largest number of eggs that I have known is five." When at the Escorial, in May 1866, I saw several pairs which had their nests on the roofs of that cluster of buildings, and was told that they breed there regularly.

Passing eastward, again, we find it, according to Doderlein, of occasional occurrence in Central Italy and Sicily; and Salvadori writes that it is but rarely known to visit Sardinia. Mr. C. A. Wright records it as "rare in Malta, and not seen annually;" and Dr. Giglioli states that he never observed it near Pisa. Lord Lilford met with it in Epirus, where it arrives in March and was found breeding on the house-tops; and in Greece, where it is tolerably common, it arrives before the equinoctial gales in large numbers, and spreads over the entire country. Lindermayer says that it affects the old Turkish ruins and places where the Turks reside; and in those where civilization had progressed to any extent, as, for instance, in Nauplia, Patras, Syra, and Athens, the Stork has gradually disappeared. He writes that the males fight to the last for the females, and records an instance, which he himself witnessed, of two males fighting until both were quite disabled.

It is not uncommon in Southern Germany; and Mr. W. H. Hudleston states that it abounds in the Dobrudscha, where it may be seen wading deliberately on the edge of every pool. In Turkey, Messrs. Elwes and Buckley write, it is "very common all over the country, arriving in the beginning of April. There is hardly a village or farm in Turkey without its pair of Storks; and in some places nearly every house has a nest on the roof. As the Stork is protected, and regarded as a bird of good omen by Turks, Greeks, and Bulgarians alike, it is very tame and familiar, and always takes up its quarters close to a house. The eggs are laid at the end of April, and are sat upon by male and female in turn." Mr. G. Cavendish Taylor met with it commonly in the outskirts of Constantinople; and I often observed it in the low lands at the mouth of the Danube. Throughout Southern Russia they are, Professor Nordmann states, numerous wherever man is present and there is plenty of stagnant water, and arrive early in March. During a period when the freshwater pools were dried up near Odessa, the Storks were very rare, and those which did appear, contrary to their usual habits, frequented the sea-shore, where they fed on several species of *Mytilus*. Canon Tristram records it from Palestine as "a regular though only a passing migrant. During the whole of April it covers the land, suddenly appearing in the south, and moving northwards a few miles a day. Thus we were told by some travellers who came up to Gennesaret that the whole country about Samaria was covered with Storks. Two days afterwards they overspread our neighbourhood, not close together, but scattered over hill and valley, plain and marsh alike, steadily quartering the ground, seldom near one another, but generally about a hundred yards apart, picking up snakes, lizards, frogs, or fish, according to the locality. Just after this I had occasion to make a six days' journey to the south-east. The Storks were everywhere, among rocks on the hills, in oliveyards, sandy plains, on the dunghills

of villages, on the top of Nebo; they remained apparently till they had cleared off the reptilian harvest, and departed for the north as suddenly as they came. A very few pairs here and there remain to breed, notably among the ruins of Gerash and Amman, perhaps also at Cæsarea. They showed great confidence in man, and are never molested by the natives."

In Egypt, Captain Shelley remarks, "during March and April I used to see immense numbers of these birds on their way north. At times they have crowded the banks like an army, and I have seen large sand-banks in the river white with them; yet I believe they never remain in the country to breed." Mr. A. E. Brehm writes that it "wanders through Egypt and Nubia, remaining, to some extent, during the winter in small companies at Sudan, many penetrating further into Africa. I found that their passage through Egypt, Nubia, and Sudan is as follows:—In 1848 they were seen about the middle of March at Chaschahba, in Kordofan, on the *durra*-fields, and later on in large flocks travelling northwards; on the 1st and 2nd of September they passed Schendi, in Southern Nubia, on their southward migration. In 1850 they were observed in Upper Egypt on the 12th of March at Khenneh, on the 14th, 18th, 20th, 22nd, and 25th of March between Khenneh and Assuan; on the 2nd and 4th of April below Wadi-Halfa, in Nubia, and again at the latter place on the 14th of April; on the 11th and 27th of September on the White Nile, and several times observed there during the winter. In 1851 from the 14th to the 30th of March and early in April by thousands near Charthum; on the 29th of August I saw a pair of Storks at Abu-Hamed: the female having been lamed by a shot, the male remained behind with her; and Schinz gives a similar instance of conjugal affection. On the 15th of September they were seen in the province of Dongola, and almost daily between Wadi-Halfa and Kohm-Ombos, in Upper Egypt. In 1852, as early as the 19th of February, above Esneh; on the 21st, 23rd, and 24th of February near Assuan, on the 28th at Edfu, and on the 5th of March at Thebes." In Algeria and North-western Africa it is not rare. Mr. J. H. Gurney, jun., writes that "as early as the 15th of February I noticed a Stork feeding in a marsh at Oued el Alleg (river of leeches), and got within fifty yards. I was informed that this was the day on which they usually returned to Medea, where a pair were repairing a nest on one of two chimneys at the gable end of a house on the 1st of the following month. The Stork leaves its nest with a spring, getting quite clear before it ventures to expand its huge wings. It does not draw in its legs, which are so long that they exceed the tail by nearly twelve inches. Its feet appear to touch when it is flying; but when it is just about to alight they are parted widely. Both sexes clap the bill, but never without first throwing back the head." Loche states that it is "very common in Algeria from the end of February to the end of September; its food is exclusively animal, consisting of reptiles, mollusks, worms, and fish, and occasionally young rats, mice, and birds; it utters no cry at any time, merely making a clattering noise by striking the two mandibles of its bill together. As is well known, the same pair return to the old nesting-place year after year; incubation lasts thirty days; and the young are fed with half-digested food from the parents' bill." Von Homeyer saw about twenty-five on Lake Halloula, and believes that they breed in Algeria; and Canon Tristram writes that it is respected in the Sahara as in Holland. It builds on the tops of the "semaurs" or mosque-towers of the M'Zab. Its food there consists of lizards of the desert. Mr. Taczanowski informs me that in the winter of 1866 in several localities in Algeria he "met with isolated individuals wintering there, and not till the

beginning of March did they arrive in numbers and establish themselves at their breeding-haunts. In the town of Constantine nests are to be seen on the houses of the Arabs. They arrive a few at a time, and I have never seen such large bands as are met with in Europe during migration." Mr. Tyrwhitt Drake records it as exceedingly numerous in Tangier and Eastern Morocco, where it is held sacred; and he counted more than sixty individuals together in one place; and Major Irby informs me that "the White Stork is much more abundant in Morocco than in Andalucia, though plentiful in some localities in the latter country. The time of migration is, of course, about the same on both sides of the Straits, the earliest date of arrival I noticed in Andalucia being on the 11th of January; nearly all leave by the end of September.

"On the African side in many situations, but always in the immediate vicinity of villages, they nest on trees, apparently in preference to houses, and are irregular as to the time of nesting. On the same day (25th of April) I found young birds, eggs, and unfinished nests, and, to show how varied is the time of migration, I saw a flight of about a hundred flying northwards at an immense height. As they passed on over the 'Storkery' they lowered themselves to within a hundred yards or so of the nests, as if to see how affairs were going on; after hovering round a few minutes, they worked up in a gyrating flight to their original elevation, and went off in a northerly direction, doubtless to the delight of the resident Storks, who were in a state of great agitation and disturbance at their appearance." It occurs on the Canaries, where, however, it is only a straggler and never remains there to breed. Messrs. Berthelot and Webb when in Lanzarote (Canaries) saw a large flock arrive there.

To the southward it has, according to Lichtenstein, been obtained in Senegambia; and Mr. J. H. Gurney refers to a specimen as being in a collection from Natal, but not sent by Mr. Ayres. Andersson records it as "abundant at Lake Ngami, and in many localities of the lake-regions; it is also quite common during the wet season in Ondonga and in Northern Damara Land, sometimes occurring in large flocks; and it is seen occasionally during the same season in Southern Damara Land." To the Cape of Good Hope it is, according to Layard, "only a migratory visitant, following the flight of locusts, on which it feeds. It is not confined to any locality, but pursues its prey to all parts of the country.

"My valued correspondent, Mrs. Barber, however, informs me that it breeds in the interior. She writes as follows:—'My authority for saying that the White Locust-Cranes build their nests in the interior is good, or I should not have mentioned it. When my brother Septimus was lion-hunting in the Free State he saw the hills where great numbers of their old nests were. Mr. William Stubbs (of the Queen's-Town district), a good observer of nature, and "a good man and true," is another of my authorities; he told me that he saw their nests upon the low rocky hills near St. John's river. Like the small locust-birds, they always build their nests in the neighbourhood of large swarms of young locusts, so that they may have plenty of food for their young ones; for young locusts remain long near the spot where they are hatched.'"

To the eastward it is met with to Japan, unless, as supposed by Mr. Swinhoe, the Japanese Stork should prove to be a distinct species. Mr. Blanford and De Filippi both record it from Persia, the former having met with it breeding in that country; and he also observed it in Baluchistan. Dr. Jerdon refers to it as "abundant in the Deccan, the west of Central India, and the N.-W. Provinces, rare in the south of India, and unknown in Bengal or in any of the countries to

the eastward. It is only a cold-weather visitant, coming in October and departing by the end of March." Mr. Blyth, however, calls in question Dr. Jerdon's statement as to its absence in Bengal, and writes on this subject as follows:—"Dr. Jerdon asserts that the White Stork is 'unknown in Bengal.' Two or three or more may be obtained almost every season in the Calcutta bazar; and I have been assured that this species occurs in large flocks not far in the interior."

Wherever the Stork is met with in Europe (excepting in those countries where it is rare, as in Great Britain, where, like all rare birds which visit our shores, it is at once shot and stuffed), it is a sacred bird, and enjoys the same protection that the Robin does with us. Mr. Alfred Benzon, in the notes on this bird which he has sent to me from Denmark, points out that "the Stork is essentially a species that figures in legend and nursery tales, and is the bird most often refered to by Hans Chr. Anderssen in his well-known tales. In every nursery throughout the country it is known as the bird that brings the children to the house. How this legend first arose it is hard to say; but probably it was from the first a woman's invention to keep the children's ideas pure and innocent, and to prevent them from prying into matters which they had much better leave alone. This legend is found, with sundry variations, in many of our nursery rhymes, amongst which I may name the following:—

Der gaar en Mand udi Moser	A man walks in the marshes
Som bœrer rœde Hoser.	Wearing red breeches.
Snart bringes en Tœs og snart en Pork,	Now he brings a lass, now a lad;
Vil Du vide hvem det er? Det er en Stork.	Would you wish to know what it is? a Stork.

"The children often use the following rhyme:—

Stork, Stork, Lange-Ben,	Stork, Stork, with long legs,
Skynd Dig lidt og vær ej sen,	Hurry on, and don't be late,
Flijv hjem hvær min Moder boer	Fly to where my mother lives,
Og bring mig en lille Bro'er.	And bring me a little brother.

the last two lines being varied as follows:—

Sœg Vester, sœg Œster,	Seek westward, seek eastward,
Og bring mig en lille Sœster.	And bring me a little sister.

"As with children, so with the peasantry, tales passed down from parent to child get to be fully believed; and the tale that the bird throws down an egg or a young bird from the nest is now firmly believed, and considered by the more illiterate of the peasantry to be a sort of offering like that intended by Abraham when he bound Isaac to sacrifice him; whereas, on the other hand, the more matter-of-fact peasants consider that the bird pays its rent thus. The tale that the Storks hold a court of justice amongst themselves, and punish any one that has been guilty of a crime, especially of a matrimonial delinquency, belongs to the same category; and a well-educated man lately assurred me in full earnest that he himself once witnessed the following scene:—A Goose egg had been put in a Stork's nest in the place of a Stork's egg, which latter had been taken away; and when the Gosling was hatched out the male Stork flew away, and returning with several others they all walked round the nest, clappering their bills, and after carefully examining the Gosling for some time, they attacked the female Stork and killed her as a punishment for her supposed faithlessness. This statement, however, cannot be trusted, as

Mr. Fischer changed eggs of the White Stork for those of the Black Stork, and they were hatched, and the young birds brought up without any apparent hesitation on the part of the foster-parents.

"The peasantry also look on the Stork as a sort of prophet; for if when it first arrives it is dirty from having been about in the marshes, they look for a damp season; but if, on the other hand, it is clean, they say that it will be a dry one. On the Danish islands the peasants believe that, if the first time a man sees a Stork it is sitting still, he will be a wanderer, but if, on the contrary, the Stork is on the wing, he will remain in one place. In Jutland they have an old rhyme in the peasant dialect as follows:—

Nær a sier en flijw	When I see it fly
Skà a blijw,	I shall stay,
Nær a sier en stóe	When I see it stand
Skà a góe.	I shall go.

"Everywhere in Denmark the Stork is a peaceful and protected bird, except on Bernholm, where it does not breed, and where, if one shows itself, it is generally shot down. The peasantry hold it sacred, and consider that it acts as a sort of protector or house-god to the house on which it places its nests; and they therefore protect it to such an extent that it is most difficult to obtain its eggs. It builds not only on houses standing alone, but in the villages and small towns. On some houses there are several nests; and the villagers put an old wheel or something of the sort on the roof, so as to give a suitable place for a nest, and thus entice the bird to build there. It builds in trees standing alone, and also in those in the forest; and in Seeland small colonies may be found on trees not far apart from each other. It is peaceful and trustful; and the Sparrows and Wrens build in full confidence in the huge structure forming the foundation of its nest; and this is the more curious, as it will sometimes feed on young birds and eggs. It is easily tamed; and instances are on record (when after its arrival there has been snow and cold weather) of its having taken refuge in the cow-houses, and made itself quite at home amongst the cattle until the weather changed and allowed it to resume its usual avocations in the open air.

"It feeds on almost all sorts of small animals, but especially on frogs, insects, and larvæ, and especially on May-bugs (*Melolontha vulgaris*), fish, mice, rats, snails, and moles, and is said also to pick up small chickens and ducklings when nothing else comes handy; poisonous snakes, such as vipers, it is said to kill, letting them first exhaust their poison on the feathers of its wing, which it uses as a shield. Its flesh is said not to be eatable. The female incubates the eggs, and during the time she sits is fed with great assiduity by the male; and both parents feed the young till they migrate. They live in strict monogamy; and the male bird is excessively jealous, not permitting any slip in the morals of his spouse. Sometimes an egg or a young bird is thrown out of the nest; for what reason I cannot tell, but believe that it is when food is scarce; or the young bird thus cast out may be weakly and defective, or has been sat on and killed. The nest is a large structure of branches and twigs, almost a cart-load in size, neatly lined with grass, straw, or any other suitable material. In a new nest the sides are not high; but in an old one they are built up nearly as high as a man; and sometimes the materials are so piled up that the peasant on whose house the nest is placed is obliged, after the bird leaves, to take away a portion so as to take the weight off the house; and this is the more necessary, as the Stork adds

to its nest every year. If the nest is removed to another place, the Stork takes possession of it next season; and sometimes a peasant sells a Stork's nest to a neighbour, so as to bring him luck. The Stork lays about the latter half of May, from three to five white eggs, which are pure white, and in size from 70 by 54 to 83 by 56 millimetres, the average size being about 80 by 55 millimetres."

My first acquaintance with the Stork was made when a lad at school in Holstein. I had been there already some time before the Storks arrived; and a nest being outside, on the end of a barn, in sight of the windows, I have often missed my lessons by remaining at the window to watch these birds. The male bird arrived about a week before his mate, and took possession of his nest after a most careful examination of it; and, from his grave looks and careful inspection of the domicile, he must have felt like a thrifty paterfamilias when a long builder's estimate for house-repairs is spread out before him. However, he did not let the grass grow beneath his red feet, but soon started to work to repair and add to the already huge structure. When the female arrived she was greeted with evident affection; and, to judge from the clattering of their bills, they must have discussed matters most thoroughly. Soon after her arrival all family matters were comfortably settled, and the business of nidification commenced in earnest. When the female was sitting she was fed with great affection by her attentive husband; and, so far as I could judge, frogs and field-mice appeared to form the chief portion of the food brought by him. With a field-glass I could observe them well, and often amused myself by so doing. I was soon initiated into the strange legends respecting the Stork so current amongst the German peasantry by my great ally the Haus-Knecht, a tall, handsome lad, rejoicing in the name of Joseph, probably because his qualities were any thing but Joseph-like. Joseph assured me with great earnestness that luck was certain to keep to the house on which the Stork built; and I fully believe that, had the Stork deserted, he would have considered himself and all the household lost beyond redemption. He likewise assured me that the Stork is a most regular tenant and strict husband, and that he paid his rent by throwing down a feather the first year, an egg the second, and a young bird the third year; and that in case his wife were not most proper in her behaviour he took the law into his own hands, there being evidently no Stork Court of Probate and Divorce, and made short work of her. The Holstein peasantry believe that the Storks hold a sort of court of justice on an offending member of their community, and call it a Storchgericht, or Stork-court. I once saw a lot of Storks collected on a large peat-bog making a great clattering noise with their beaks, which lasted some time, and was followed by an onslaught upon one individual, who, as the Americans say, "went under" in no time. This happened just before the time of migration; and my own impression is, that the unfortunate victim was a wounded or weakly bird unfit to bear the fatigues of the journey, and, like wise birds, his comrades preferred to put him out of his misery rather than allow him to pine and die by inches when they left and he could not find subsistence.

Dr. Jerdon, writing on Indian ornithology, states that, "from the open country the Stork frequents, it is well adapted for being hawked, and it is accordingly a common and favourite quarry for a good *Bhyri*. It is the most gregarious of all the Storks; and immense flocks are sometimes seen. The name *Lag-lag* is correctly applied to this species by all falconers; and I see that it is the *Leglek* of the Bucharian Tartars, according to Pallas."

The specimen figured is an adult female in my own collection, obtained, with eggs, in Albania by Mr. Hanbury Barclay; and the male described is the one in Mr. J. H. Gurney's, jun., collection, referred to below.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ (with eggs). Albania, April 1872 (*Hanbury Barclay*).

E Mus. J. H. Gurney, jun.

a, ♂. Leadenhall Market, April 20th, 1867. *b*. Nice. *c*. Southern France.



BLACK STORK.

CICONIA NIGRA

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CICONIA NIGRA.

(BLACK STORK.)

Ciconia fusca, Brisson, Orn. v. p. 362, pl. 31 (1760).
Ardea nigra, Linn. Syst. Nat. i. p. 235 (1766).
Ardea nigra, L., Gm. Syst. Nat. i. p. 623 (1788).
Ardea atra, L., Gm. tom. cit. p. 641 (1788).
Ardea chrysopelargus, Licht. Rer. Nat. Rar. Hamb. p. 284 (1793).
Ardea chrysopelargus, Licht., Wagl. Syst. Av. no. 9 (1827).
Ciconia nigra (L.), Cuv. Règn. Animal, i. p. 513 (1829).
Ciconia fusca, C. L. Brehm, Vög. Deutschl. p. 576 (1831).
Ciconia nigra (L.), C. L. Brehm, tom. cit. p. 576 (1831).
Melanopelargus, Reichenb. (*Ciconia nigra*, L.), Syst. Av. pl. 165. f. 453, 454 (1850).
Melanopelargus niger, Reichenb., Bp. Consp. Gen. Av. ii. p. 105. no. 99 (1857).

Cigogne noire, French; *schwarzer Storch*, *schwarzer Reiher*, *Aist*, German; *Cicogna nera*, *Cicogna niura*, Italian; *Grua*, *Cicogna senda*, Maltese; *sort Stork*, Danish; *svart Stork*, Swedish.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 399; Werner, Atlas, *Coureurs*, pl. 21; Fritsch, Vög. Eur. pl. 41. fig. 2, pl. 44. fig. 3; Kjærb. Orn. Dan. taf. xxxii.; Sundevall, Sv. Fogl. pl. xlvii. fig. 2; Gould, B. of Eur. pl. 284; id. B. of G. B. iv. pl. 31; Naumann, Vög. Deutschl. taf. 229; Schlegel, Vog. Nederl. pl. 200; Roux, Orn. Prov. pl. 325; Reichenbach, *l. c.*

♂ *ad.* corpore suprà, collo et pectore superiore nigricanti-fuscis nitore metallico virescente et cupreo resplendentibus: dorso, alis et caudâ sordidioribus: pectore imo et abdomine albis: rostro, pedibus, mento et orbitis lævibus rubris: iride fuscâ.

♀ haud a mari distinguenda.

Av. juv. nigricanti-fuscus pallidior quam adultus: capitis et colli plumis albido terminatis, rostro et pedibus fusco-olivaceis.

Adult Male (Brunswick, 15th May). Head, neck, fore part of the breast, and upper parts generally, black, glossed with metallic reflections; crown, chin, and nape, and also the lower part of the neck, very richly glossed with coppery and purplish reflections, in some lights becoming violet, rest of the neck glossed with green similar to the shade on a cock's tail; back, tail, and wings brownish black, more indistinctly glossed with metallic purple, lower part of the breast and remainder of the underparts pure white; beak, naked skin round the eye, and legs red, with an orange tinge; iris reddish brown; claws black. Total length 39 inches, culmen 7·4, wing 21·1, tail 9·5, tarsus 7·5, bare portion of tibia 4·5.

Adult Female. Similar in plumage to the male.

Young of the year (Brunswick, October). Differs from the adult in being duller in colour, the head and neck dull metallic brown, each feather terminated with dirty white, giving a spotted appearance; the beak and legs olive-green, with a bluish tinge.

When rather older, or nearly adult, the head and neck lose the white spots, and the beak and legs are pale reddish. In this plumage I have figured it.

Nestling (fide *Naumann*). When first hatched it is covered with greyish white down, through which after a time the dark feathers appear, those on the wings and tail first showing themselves, then those on the shoulders, back, and on the sides of the head.

The Black Stork is found in Central, Southern, and, to some extent, in Northern Europe, in Africa, and in many parts of Asia, as hereinafter stated.

In England the Black Stork is extremely rare, and is only met with as an occasional straggler. The instances of its occurrence recorded by Mr. Harting are as follows:—"one, Somerset, May 1814 (*Montagu*); three, Norfolk, 1823 (*Stevenson*); one on the Tamar, Devon, November 1831 (*Moore*); one, Otley, Suffolk, October 1832 (*Hoy*); one, Somersetshire (*Atkinson*); one, Poole Harbour, Dorsetshire, 22nd November, 1839 (*Yarrell*); one, Romney Marsh (*Pemberton Bartlett, Stevenson*); one, Poole Harbour, Dorsetshire, 1849 (*J. H. Gurney*); one, Market Weighton Common, Yorkshire, 1852 (*Yarrell*); one, Lydd, Kent, 5th May, 1856 (*Dennis*); one, near Hartlepool, August 1862 (*Christy Horsfall*); one, Otmoor, November 1862 (*Gould*); one, Westacre, Norfolk, 19th May, 1867 (*Hamond*)." This last occurrence was recorded by Mr. Stevenson, in his 'Birds of Norfolk' (vol. ii. p. 182), as follows:—"On the 20th of May, 1867, I received a letter from Mr. Anthony Hamond, jun., informing me that a fine Black Stork had been shot by one of the gamekeepers in some meadows on the banks of the river Nar, at Westacre, about half-past four in the morning of the 19th. The bird, it seems, had been observed about the same locality on several occasions for more than a week, but had hitherto kept well out of shot; and only on the day previous to its death Mr. Hamond and myself had been watching a pair of Gadwalls in the Nar, scarcely a quarter of a mile from the spot where the Stork was killed. It proved on dissection to be an adult female, weighing over seven pounds, and measured, I am told, six feet two inches from tip to tip of wings. Its plumage showed no signs of having been in confinement; and, owing to its extreme shyness, it was even at last obtained with much difficulty. This noble specimen now forms part of the fine collection of birds at Westacre High-house.

"Although the first time that this species has been known to be killed in this country, it is probable that others may have visited our coast, and either escaped injury or passed wholly unnoticed. Thus in Mr. Joseph Clarke's MS. notes on rare birds at Yarmouth and other parts of the county, I find the following, under the head of *Ciconia nigra*:—'Three were followed in Norfolk for some days in the year 1823; and in 1832 one was killed in Suffolk, at Grundisburgh, and was in the possession of a surgeon, a Mr. Ditton, of that place.'"

Mr. J. H. Gurney informs me that he has a specimen, in the authenticity of which he fully believes, said to have been shot at or near Poole, in Dorsetshire. It does not appear ever to have occurred in Scotland; but it may in former years have been found in Ireland, as Dr. Scouler (*fide* Thomp. B. of I. ii. p. 178) includes it in a 'Notice of Animals which have disappeared from

Ireland,' on the authority of the following words from Giraldus:—"Ciconiæ vero per totam insulam rarissimæ sunt illæ nigræ."—*Top. Hib.* 707.

It has been met with twice in Norway, as Mr. Collett writes to me that there is a specimen in the Christiania University Museum, which was shot at Fredrickstad, and since then one was shot at Vang, in Hedemarken.

In Sweden it is, Dr. Sundström informs me, "very rare, occurring singly or in pairs, frequenting lonely woods far from human habitations. It has been recorded from Skåne, Småland, Ostergötland, Vestergötland, Dalsland, Wermland, Nerike, Gestrikland, Helsingland, and on Gottland. In the summer of 1862 one frequented Qvistbro parish, in Nerike, where I then lived. It breeds, as also Mr. Meves informs me, at Ringsjö, in Skåne, and as far north as Gestrikland, but is with us a migrant; but, curiously enough, the only specimen obtained on Gottland was shot in the winter. It places its nest on the lower branches of both conifer and non-evergreen trees. A specimen is in the University Museum at Helsingfors, which was obtained in the southern part of Finland."

In Eastern Russia the distribution of the Black Stork is, Mr. Sabanäeff informs me, most peculiar, as, strange to say, it appears never to be met with in the interior. It has been observed in the Government of Vologda during migration, and breeds in the south-western portions of Perm. Bogdanoff writes that it has been known to nest on the central Volga; and Daniloff records it as observed only during passage in the Government of Orloff, but common in Charkoff. Mr. Sabanäeff further writes that it breeds in the Poleffsky and Niajepetrovsk Ural, is occasionally met with on the eastern slope, and appears annually in the district of Ekaterinburg. Falk met with it on the Kama.

Mr. Taczanowsky, writing from Warsaw, informs me that "it is rare in Poland, and, as elsewhere, it only breeds in swampy forests situated in different parts of the country, and always in isolated pairs. According to Professor Kessler it is just as rare in the districts of Kieff, and does not seem to be more numerous in Siberia." I saw it not unfrequently in Pomerania; and Borggreve records it as "not a rare summer visitor to the eastern portion of North Germany, where it is found in the swampy woods, being most numerous on the coast of Pomerania. In the western portion of the empire it but rarely occurs. According to Brahts it sometimes breeds at Neuwied, and according to Von Negelein in Oldenburg; and Saxesen likewise states that it nests in the Harz. Formerly it used to breed in Münsterland, near Cassel, and other places. It occurs sparingly in Anhalt and Holstein, and is tolerably numerous in Brandenburg." Borggreve himself saw a flock of over a hundred individuals in the spring at Odenbruch.

In Denmark it is not uncommon, and breeds annually, as I am informed by Mr. Fischer, at Fredrikslund. In Holland, Belgium, and Luxemburg it occurs at rare intervals during the spring and autumn migrations, and is extremely shy. MM. Degland and Gerbe write that "it occurs with tolerable regularity on the autumn migration in the north of France; and many individuals have been obtained near Quesnoy, Lille, Dunkirk, Boulogne, Montreuil-sur-Mer, and Abbeville; also at Nancy, Toul, Metz, and Briey, according to Godron. Near Marseilles it is obtained nearly every year in the pine-woods bordering the sea."

I do not find it recorded by Professor Barboza du Bocage as having been met with in Portugal; but regarding its occurrence in Spain Lord Lilford writes to me, "the Black Stork,

though well known, appears not to be abundant in Spain. I only once saw it in that country; this was on the Isla Mazon, of the Guadalquivir, early in May 1872, as we were going by steamer to San Lucan from Seville; the bird was conspicuous amongst many hundreds of *Ciconia alba* and several small parties of *Otis tarda*. Major Irby sent me an immature bird killed near Seville. I have authentic information to the effect that this species nests in certain localities of Central and Southern Spain." Mr. Howard Saunders, writing on the ornithology of Southern Spain, states (Ibis, 1871, p. 393):—"I did not meet with this species in Andalucia; but specimens are in several museums. Near the Montes de Toledo I knew of two nests this year, both in holes of rocks, and saw the birds belonging to one of them, which it would have taken more time and trouble to rob than the contents were worth."

Passing eastward again we find it, according to Bailly, rare in Savoy, occurring principally in the autumn, and but rarely during the spring migration. Savi also speaks of it as rare in Tuscany; but, as young birds were obtained in August and September 1823, he is inclined to believe that it has bred in that country. Professor Doderlein records its appearance in Sicily on the passage, principally about Catania, Lentini, and Syracuse; also in the Nebrodiani mountains some few pairs have been seen, but it has never been positively ascertained that they bred there. In Sardinia, according to Salvadori, it is more abundant than the White Stork. Mr. C. A. Wright, who observed three in St. Julian's valley, Malta, in April 1852, records it (Ibis, 1864, p. 144) as rare on that island. Lord Lilford, writing on the ornithology of the Ionian Islands (Ibis, 1860, p. 347), says it "is very rare in these parts. The bird-stuffer at Corfu told me that two specimens only had passed through his hands in the course of thirty years. One of these was killed at Butrinto (Epirus), and the other in the island of Corfu."

Lindermayer (Vög. Griech. p. 153) states that but few are seen in spring, but the young birds are not unfrequently seen early in October. It does not breed in Greece; but he saw numbers in June on the Bosphorus. In Southern Germany the Black Stork is but a rare visitant during migration. The Ritter von Tschusi-Schmidhofen writes to me that "in Bohemia they are found only during migration now, although they were breeding there some years ago. In Moravia one old male was killed in 1847 near the Paskaner lake, and a young male was shot in September 1851. Some few individuals are to be met with annually during migration, according to Schwab. The Imperial Museum at Vienna possesses several specimens killed some years ago near that city. In Austria they are rare. There are specimens in the collection at Linz, at Flonian, and Kremsmünster. One specimen was killed on the Inn, near Saltzburg, in 1829; and another was obtained in August 1867 near Bregenz." Dr. Anton Fritsch also, writing on the ornithology of Bohemia, states that it "appears now and then in Bohemia, as at Turnau on the Iserwiesen, near Rumburg (*Lokaj*), at Jicin (*Dr. Schier*), and near Franzensbad (*Palliardi*). Formerly it used to breed near Wittingau, but has not lately been observed there." In the countries bordering on the lower Danube it is not common. When in Servia and Wallachia I had it described to me, and was assured that it breeds there, but never succeeded in seeing a specimen, either preserved or alive. Messrs. Elwes and Buckley write (Ibis, 1870, p. 334) that "a pair is to be found here and there in most parts of Bulgaria. It arrives at the same time as the White Stork, and is just as shy and solitary as the other is sociable. The nest is usually built in a rock in a lonely situation, and is used for many consecutive years. We saw the Black

Stork in the Pravidy valley, and near Babadagh, where a pair were making their nest in a low rock on the edge of the forest." An interesting account was also published by Mr. W. H. Hudleston respecting the nidification of the Black Stork in the Dobrudscha, from which I give extracts below. Professor Nordmann met with it in the Crimea, where, he states, it is not rare, but is less abundant in Bessarabia. Ménétries (Cat. Rais. p. 50) records it as common at Lenkoran, in the Caucasus; and Canon Tristram writes (Ibis, 1868, p. 326), in Palestine it is found throughout the winter "in small flocks on the barren plains by the Dead Sea, never visiting the upper country. I was told that they build in the oak trees in Bashan, but did not meet with them in my hasty ride through that country."

In Northern Africa it occurs in Egypt and Nubia on the eastern side; and on the western side it has been recorded from various localities down to the Cape colony, where Layard (B. of S. A. p. 315) met with it; Rüppell met with it occasionally in Abyssinia during the winter; and Von Heuglin records it as found on the damp elevated plateaux of Semien and Woggera, at an altitude of from 9000 to 10,000 feet. Captain Shelley writes (B. of E. p. 265) that it "ranges throughout Egypt and Nubia, but is not very plentiful;" and Mr. E. C. Taylor refers to it (Ibis, 1859, p. 51) as seen frequently in Egypt, but less numerous than *C. alba*.

On the west side it has not been recorded from Algeria; but Major Irby informs me that it occurs frequently in Morocco, and was seen by him near Tangier, where, however, it is rare. Lichtenstein records it as occurring in Senegambia; Beaudouin as found at Bissao; Pel met with it in Ashantee; and Chapman on the Zambesi. Messrs. Finsch and Hartlaub (Vög. N.O.-Afr. p. 720) state, on the authority of the late M. Jules Verreaux, that it is tolerably numerous in the Cape colony, and breeds there. Vernon Harcourt records it (P. Z. S. 1851, p. 146) as found in Madeira; but Mr. Godman does not include it in his list of the birds of the Azores.

To the eastward the Black Stork occurs in India, China, and South-eastern Siberia. De Filippi did not meet with it in Persia, but only in the Caucasus. Dr. A. Leith Adams (P. Z. S. 1858, p. 508) shot a female on the Jhelum river, in the vale of Cashmere, but did not observe it elsewhere. Dr. Jerdon (B. of I. ii. p. 735) writes, it is "rare in India. I have seen it occasionally, and killed it in the Deccan, and also near Saugor, in Central India; it has been sent from the Dehra Doon to the Museum of the Asiatic Society, and is probably not very rare in the Punjab. It frequents secluded wooded streams, rivers, and lakes, and lives chiefly on aquatic food. It is considered one of the finest quarries for the *Bhyri*, and the day that a Black Stork is killed is marked by the Indian falconer with a white stone. The Black Stork is only a winter visitant to India." It has been met with in China; and Mr. Swinhoe states (P. Z. S. 1871, p. 411) that it "inhabits, in small numbers, the mountains near Pekin that yield streams containing fish, and nests on inaccessible rocks." Dr. Dybowski met with it in Dauria, where it is, he states, tolerably common, and is called by the Buriats "*Chylyn*;" and Dr. G. Radde writes that he saw it near Nasarün at an altitude of about 2000 feet above the sea-level; on the Upper Amoor and on the Lower Schilka, where the banks were steep and well wooded, this species was common; but none were observed between the Bureja Mountains and the Ussuri, where there is no wood. He saw three on the Tarei-nor on the 4th of May; and on the Bureja Mountains the first were observed on the 27th of April.

In its habits the Black Stork is far less sociable than its close ally, *Ciconia alba*, and, unlike

that species, it does not frequent the neighbourhood of dwellings, but is more usually met with in marshes near or in the forests, or far from human habitations. It resembles the common Stork in its general habits, but is far more shy, is found in pairs, and is not, even during the seasons of migration, seen in companies like that species. In confinement it is wilder, and not so easily tamed. Montagu gives some excellent notes respecting the specimen captured in Somersetshire, which I transcribe from the 'Linnean Transactions' (vol. xii. p. 19) as follows:— "It made little resistance, and on the following day ate some eels that had been placed near it. I was greatly rejoiced to receive this interesting bird alive from Mr. Austin, as its manners do not seem to be much known. Like the White Stork, it frequently rests upon one leg; and if alarmed, particularly by the approach of a dog, it makes a considerable noise by reiterated snapping of the bill, similar to that species. It soon became docile, and would follow its feeder for a favourite morsel, an eel. When very hungry it crouches, resting the whole length of the legs upon the ground, and supplicantly seems to demand food, by nodding the head, flapping its unwieldy pinions, and forcibly blowing the air from the lungs with audible expirations. Whenever it is approached the expulsion of air accompanied by repeated nodding of the head is provoked. The bird is of a mild and peaceful disposition, very unlike many of its congeners; for it never makes use of its formidable bill offensively against any of the companions of its prison, and even submits peaceably to be taken up without much struggle. From the manner in which it is observed to search the grass with its bill, there can be no doubt that reptiles form part of its natural food; even mice, worms, and the larger insects probably add to its usual repast. When searching in thick grass or in the mud for its prey, the bill is kept partly open: by this means I have observed it take eels in a pond with great dexterity; no spear, common in use for taking that fish, can more effectually receive it between its prongs than the grasp of the Stork's open mandibles. A small eel has no chance of escaping when once roused from its lurking-place. But the Stork does not gorge its prey instantly like the Cormorant; on the contrary, it retires to the margin of the pool, and there disables its prey by shaking and beating with its bill, before it ventures to swallow it. I never observed this bird attempt to swim; but it will wade up to the belly, and occasionally thrust the whole head and neck under water after its prey. It prefers an elevated spot on which to repose; an old ivy-bound weeping willow, that lies prostrate over the pond, is usually resorted to for that purpose. In this quiescent state the neck is much shortened by resting the hinder part of the head on the back, and the bill rests on the fore part of the neck, over which the feathers flow partly so as to conceal it, making a very singular appearance." Mr. A. Benzon, writing to me on its habits as observed by him in Denmark, says that "it appears to arrive earlier and leave sooner than the common Stork. In the forests on the peninsula it is not rare, but breeds only seldom, and not regularly on the islands, as for instance on Seeland. It is any thing but sociable; and but seldom more than two or three pairs inhabit the same wood, though more commonly but one pair are found in each district. It is much more shy and wilder than the White Stork, stronger on the wing; and the young birds are able to feed themselves much earlier. The young birds, which are at first covered with greyish yellow down, are soon able to stand in the nest, and are not fed by their parents until they leave the country as is the case with those of the White Stork. The food of this bird is more that of the Heron than that of the common Stork; and it lives, to some extent, on fish, which it obtains both on inland sheets of water and on the sea-coast."

Unlike the White Stork, which generally places its nest on a house or on a tree close to a village or farm-house, the present species breeds in unfrequented forest districts, usually near a small lake or swamp, and places its nest on some large tree, most commonly on a large oak or beech, the position chosen being on one of the large side branches at some distance from the ground. The nest itself is constructed of dried sticks, and lined with grass or moss; the construction is often but poor and slight; and sometimes the deserted nest of some other bird is selected to form the foundation of the Stork's nest. It is said never to breed in the immediate neighbourhood of another of its own species, each pair keeping a considerable tract of land in their own possession. During the breeding-season they are very shy, and most difficult of approach, but they sit close and seldom leave the nest until an intruder is close to the tree on which it is placed. The usual number of eggs is from three to four; but I have had several clutches of five, and have been told on good authority that six are sometimes deposited. It does not always place its nest on a tree, but occasionally in a cliff; and Mr. W. H. Hudleston gives (Ibis, 1861, p. 372) the following notes on its nidification in Bulgaria:—"The Black Stork (*Ciconia nigra*) also breeds here; at least we discovered one nest in a very peculiar position for a bird which has the reputation of breeding in the densest thickets of impervious morasses. The cliff in this case was about sixty feet high, the strata being horizontal or nearly so. In the face of the upper ledge there had been at some time, artificially excavated in the soft stone, a chamber having a sort of antechamber, which communicated by means of a couple of steps with a crack in the rock. This crack was not difficult to reach from the top when the exact path was once known. The chamber itself had much the appearance of a hermit's cell; but as the aperture in the face of the cliff was the entire width of one side, the apartment was airy and cheerful, commanding a fine view of the valley below. Altogether it was a place where one could have had no objection to put up for a few days in case of necessity. There it was that a pair of Black Storks had taken lodgings for the season, as we found one morning about the 27th of April. Some little time elapsed before we discovered the secret of the entrance from the top, a fact of which the Black Storks were probably not cognizant. At the time of our first visit there were no eggs, nor indeed was there any thing exactly worthy of the name of a nest. But in the floor of the chamber was a circular depression about the size and shape of a large dinner plate, not far from the edge of the aperture. For what singular purpose this depression, evidently artificial, had been made, was to us as great a mystery as the origin of the entire excavation. The Black Stork had evidently thought she could put it to some use; for it was here, upon a few dry sticks which partially filled the depression, that she meant to lay her eggs. As it was necessary for me to leave Turkey altogether about the 4th of May, it was agreed not to approach the place again till the day of my departure. In the interim I used occasionally to take a stroll down the valley, and seat myself on the opposite hill, where, through the telescope, I could see the Black Stork sitting composedly on her makeshift of a nest, looking like some spirit of darkness in its cave. Already I was counting the eggs, which would undoubtedly have been mine but for the evil curiosity of a Transylvanian shepherd, who had noticed me spying into the hole, and had perhaps seen us entering it. On the appointed day I rode over with my friend R. B. Dismounting at the edge of the cliff, we crept down to the crack in the rock, and thence through the artificial passage into the chamber itself. Neither bird nor eggs were visible; some great catastrophe had happened, and the eggs I had counted on, though laid,

were missing. It transpired that the Transylvanian had done the deed, having probably sucked the eggs on the spot. We sought him everywhere in the desperate hope that he might have preserved them, perhaps also with the view of taking the change out of him in some other way in the extremely probable event of their not being forthcoming. Fortunately for the Transylvanian he was not to be found.

"Through the kindness of my friend I was not wholly disappointed after all. The Black Stork returned to her nest and laid two more eggs, which he secured and brought over to England the following summer."

Mr. A Benzon, who has taken numbers of the eggs of the Black Stork, writes to me that they are much less in size than those of the White Stork, measuring from 64 by 50 to 70 by 53 millimetres, the average size being about 68 by 52 millimetres. In shape and grain they resemble the eggs of *C. alba*; but the colour of the inside of the blown egg is yellowish green. Eggs in my collection, obtained by Mr. Benzon in Jutland, and by myself in Pomerania, agree with the above description, and I therefore do not redescribe them. Dr. E. Rey informs me that he has measured twenty eggs of the present species and twenty-six of *Ciconia alba*, the former of which average in size 64·5 by 48·2, and the latter 72·7 by 52·1 millimetres; the largest specimens of *C. nigra* measure 67·5 by 48·0, and the largest of *C. alba* 76·5 by 53·0; and the smallest of the former 61·0 by 48·0, and of the latter 67·5 by 52·0. He further informs me that he possesses eggs from Oldenburg, Mark-Brandenburg, Anhalt, Silesia, Pomerania, Hungary, and Denmark.

When quite young the Black Stork utters a peculiar guttural note; but, according to Naumann, when about six months old it ceases to utter any note, but clappers with its bill like *Ciconia alba*, but not so often or so loud, nor does it make this sound when retiring to roost as does the White Stork.

It feeds on fish, frogs, snakes, mice, worms, and various sorts of water-insects, but more especially on small fish; and, being extremely voracious, it does considerable damage in fish-ponds. Naumann writes that the stomach of one he examined contained about twenty loach (*Cobitis fossilis*), some of which were ten inches long; another had in its stomach three large rudd (*Cyprinus erythrophthalmus*), about forty young perch (*Perca fluviatilis*), and several sticklebacks (*Gasterosteus aculeatus*); and a third contained a roach (*Cyprinus rutilus*) as long as a man's hand, about sixty perch about an inch long, and a frog.

The Black Stork must be long-lived, as a specimen lived, I am informed by Mr. Gurney, in the Gardens of the Zoological Society about thirty years.

The specimens figured are in the Gardens of the Zoological Society, Regent's Park; and those described were obtained near Brunswick, and are in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Brunswick, May 15th, 1872. *b*, ♀ *juv.* Brunswick, October 3rd, 1872 (*M. Schültz*).

Family PLATALEIDÆ.

Genus PLATALEA.

Platea apud Brisson, Orn. v. p. 352 (1760).
Platalea, Linnæus, Syst. Nat. i. p. 231 (1766).

This very distinct group of birds is found in the Palæarctic, Ethiopian, Australian, Nearctic, and Neotropical Regions, only one species inhabiting the Western Palæarctic Region.

In general habits they are not unlike the Storks; and their flight resembles that of those birds. They frequent marshy localities, the borders of lakes and lagoons; and I have also seen them close to the sea-shore. They walk sedately and slowly, and may often be seen perched on a tree. They are shy and wary; and as they frequent open localities, they are most difficult of approach. Their cry is deep and Heron-like; and they make a clapping noise with their bill like Storks. They place their nest on a tree, a bush, or in the reeds—a somewhat bulky structure of sticks and flags lined with dry flags and rushes,—and deposit three or four white eggs spotted with pale rufous.

Platalea leucorodia, the type of the genus, has the bill long, straight, about as broad as the head at the base, narrowed towards the middle, and then expanded into a broad disk, which is slightly curved downwards at the tip, gape-line nearly straight; nostrils linear, elliptical, vertical; space round and in front of the eye bare; wings large and full, the first quill rather shorter than the second, which is about equal to the third; tail short, even; legs long, rather slender, the tibia bare on the lower half, reticulated; tarsus rather stout, reticulated; toes long, moderately stout; claws small, slightly arched, tapering, pointed.

In the article on the Spoonbill I used Brisson's generic title *Platea*, not having taken into consideration the fact that, according to the British-Association rules, Linnæus's genera always take precedence of Brisson's. The Spoonbill should therefore stand as *Platalea leucorodia*, and not *Platea leucorodia*.



SPOONBILL.

PLATEA LEUCORODIA

PLATEA LEUCORODIA.

(SPOONBILL.)

Platea, Briss. Orn. v. p. 352 (1760).
Platalea leucorodia, Linn. Syst. Nat. i. p. 231 (1766).
Platea leucopodius, S. G. Gmelin, Reise, p. 163 (1770).
La Spatule, Buff. Ois. vii. p. 448. pl. xxiv. (1780).
Platea leucorodia (L.), Leach, Syst. Cat. M. & B. Brit. Mus. p. 33 (1816).
Platalea nivea, Cuvier, Règne An. i. p. 482 (1817), ex Buffon.
Platalea nivea, C. L. Brehm, Vög. Deutschl. p. 600, "Holland" (1831).
Platalea leucorodius, Gloger, Schles. Wirbelth.-Fauna, p. 50. no. 220 (1833).
Platalea pyrrhops, Hodgson, Gray's Zool. Misc. p. 86. no. 144, "Nipaul" (1844).
Platalea leucorodia, Linn., G. R. Gray, Hand-list, iii. p. 37 (1871).

Spatule blanche, French; *Espatula*, *Patera*, *Pilatos*, *Paletone*, Spanish; *Palettuni*, Italian; κουλιάρι, Greek; *Löffler*, *Löffelgans*, *Löffelreiher*, German; *De Lepelaar*, Dutch; *Hvid Skeehevia*, *Skovenæb*, Danish; *Skegaas*, Norwegian; *Warzecha*, Polish; *Kolpitza*, Russian; *Bou-kar-kaba*, Moorish.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 405; Werner, Atlas, *Gralles*, pl. 4; Kjærb. Orn. Dan. taf. xxxiii.; Fritsch, Vög. Eur. pl. 42. fig. 6; Sundevall, Sv. Fogl. pl. lxxvii. fig. 2; Gould, B. of Eur. pl. 286; id. B. of G. B. iv. pl. xxxii.; Naumann, Vög. Deutschl. taf. 230; Schlegel, Vög. Nederl. pl. 198; Roux, Orn. Prov. pl. 310.

♂ *ad.* albus: pileo cristato: gutture imo et pectore superiore flavicanti-ochraceis: gulâ et loris nudis flavicantibus, illâ vix rufescente lavatâ: rostro versùs basin nigro sordidè flavicante notato, et versùs apicem flavo vix nigro notato: iride rufescente: pedibus nigricantibus.

Adult Male in spring (Spain). Entire plumage pure white, excepting on the lower part of the neck, where it is buffy yellow; feathers on the nape much elongated, forming a conspicuous occipital crest, these crest-feathers having the filaments disunited; bill black, marked with dull yellowish, the margins dusky, the terminal portion, or almost all the plate, yellow, marked on the upper portion with black; loral space pale yellow, the fore portion dusky; bare portion of the gular region, which extends nearly three inches from the base of the lower mandible, reddish yellow; iris red; legs and feet dusky blackish. Total length 32 inches, culmen 7·2, wing 15, tail 5, tarsus 5, bare part of tibia 3·5.

Winter plumage. In the winter the crest is wanting, or less developed than in the summer.

Female. Similar in plumage to the male, but having a smaller crest.

Nestling. Covered with short, pure white down; the beak already shows the peculiar spoon-shape characteristic of this species.

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The Spoonbill inhabits Central and Southern Europe (only occasionally straggling into Northern Europe), Northern Africa, the Azores and Canaries, ranging eastward to India and Siberia. In Great Britain it used, some two hundred years ago, to breed in the eastern counties, but is now only a rare straggler, though seen almost every year on our east coast. Mr. R. Gray (B. of W. of Scotl. p. 286) considers that in Scotland it "will probably be found to be an occasional visitant to the western islands. I am informed by Mr. H. D. Graham that this bird has been accurately described by several residents on the Outer Hebrides to Mr. Colin M'Vean. At Barra, especially, the species has recurred oftener than once; on one occasion five were seen flying together in a flock. I am unable, however, to say any thing from personal observation. The species has also been seen on the east coast, in Tyne estuary; and has been shot in Shetland, where, however, it is extremely rare. In October 1859, a flock of ten were seen flying across the Bay of Kirkwall, in Orkney, by some workpeople, who soon spread the information, which led to the destruction of half their number. A week afterwards three more were seen, one of which was killed, thus making the sixth 'martyr to the cause of science,' as subjects of this kind are now mildly termed. All these specimens were young birds without the crest." From time to time stragglers are met with in almost all parts of England, more especially on the east coast, where numerous occurrences are recorded. Mr. Stevenson writes to me that "it visits Norfolk almost every spring. This year no less than five were shot on Breydon in spite of the new act." This gentleman, in his 'Birds of Norfolk,' gives very concise information respecting the nesting of this species in Norfolk; and I cannot do better than quote from him as follows:—"But for the most trustworthy records of Sir Thomas Browne, it would scarcely have been credited at the present time that this remarkable species was formerly a resident in East Anglia. This important fact, however, is preserved to us in the following passage from Sir Thomas's notes on the birds of Norfolk:—'The Platea or Shovelard, which built upon the tops of high trees. They formerly built in the hernery at Claxton and Reedham; now at Trimley, in Suffolk. They come in March, and are shot by fowlers, not for their meat, but for the handsomeness of the same; remarkable in their white colour, capped crown, and spoon or spatule-like bill.' From so minute a description of the species, there can be no doubt as to its identity; but even at that time (1688) it seems, through the persecution of the fowlers, they had ceased to breed in Norfolk, though still found at Trimley, in Suffolk, the 'handsomeness' of their plumage rendering their destruction as certain as in more modern times. Pennant, whose most elaborate account of the Spoonbill was taken from a freshly killed specimen, sent him from Yarmouth by the late Mr. Joseph Sparshall, states in the 'Appendix' to his 'British Zoology,' that 'a flock of these birds migrated into the marshes, near Yarmouth, in Norfolk, in April 1774;' but since that time, although an annual visitant to our shores on its migratory passage, it has come only in pairs, or at most three or four at one time." Mr. Stevenson records the occurrence of the following specimens between 1774 and 1868:—"June 1818, a pair were seen at Cromer; and one was killed at Yarmouth in the month of May of the same year (*Sheppard and Whitear*). In 1829, Mr. Hunt remarks in his list, 'in the course of the last five or six years seven or eight of these birds have been killed at Caister and Burgh, in the neighbourhood of Yarmouth.' Two in May 1830 (*Selby*); one May 21st, 1831; three June 1834; one in 1838 (*Sir William Hooker's MS.*); two near Yarmouth, one at Norwich prior to 1846 (*J. H. Gurney's collection*); two killed at Salthouse,

1845 (*Dowell*); 1847, May 2nd, one near Yarmouth, one on the 19th at Salthouse, two seen at Blakeney (*Dowell*); and on October 27th one was killed at Salthouse (*Dowell*); 1848, February 11th, one at Langham, and on the 15th of November one at Salthouse (*Dowell*); 1849, June, one near Yarmouth, and another in the same year at Salthouse; 1850, June 18th, one at Breydon; 1852, a pair frequented the lake at Holkham throughout March and part of April; 1853–54, a pair procured about this date in Hocwold fen; 1859, May 4th, one shot at Hickling; 1860, July 6th, one shot on Breydon; 1862, May, two shot on Breydon; 1863, May 15th, one shot at Hickling, two or three seen on Breydon, and a pair shot between Lowestoft and Southwold, in Suffolk, on the 1st of May; 1864, October 25th, one killed at Hickling, and one shot at Yarmouth about the same date; 1865, May 23rd, a pair shot on Breydon, and one was killed during the spring of this year at Sandringham, near Lynn; 1866, May 2nd, one shot on Breydon; 1867, three or four seen in the spring about Burgh flats, but none shot; 1868, May 4th, two shot at Yarmouth, and one killed on Breydon about the same time." At p. 189, Mr. Stevenson writes, "from an examination of the above list of specimens it will be seen that the Spoonbill is chiefly a spring and summer visitant to this country, since of those of which the date of occurrence is known, only eight have appeared towards the latter part of the year—two in August, one in September, three in October, and two in November,—the remainder in February (one), March and April (two), May (eighteen), June (ten), and one in July, whilst the large flock at Yarmouth, in 1774, is said to have arrived in April. The majority of specimens obtained are decidedly in immature plumage. Unlike the Stork the Spoonbill, though similarly persecuted, does not often betake itself far inland, relying mainly for subsistence on the daily renewed feast afforded by the ebb and flow of our tidal waters; and hence the large proportion of them that are seen and procured on Breydon. The Salthouse marshes, until their drainage and embankment in 1851, were also a most favourite resort of the Spoonbill, as well as of the Avocet, a somewhat similar feeder; but this spot is no longer adapted to their habits. An occasional straggler or two may be seen, however, along the flat shores of the wash; and Hickling, near Yarmouth, appears to be the only broad that has special attractions for this singular species." Mr. Harting records it from Kingsbury reservoir, close to London; and I find various records of its occurrence on the south coast of England. Mr. Gatcombe also informs me that immature birds are occasionally met with on the mud banks of the tidal rivers near Plymouth. On the west coast of England it is rarer than on the eastern side, and but occasional instances of its occurrence are on record. Mr. Cecil Smith informs me that "it has been occasionally met with in Somersetshire; besides the one recorded by Montagu, there is the skull and bill of one in the Museum at Taunton, which was shot in that county; but no date is given." In Ireland it is likewise recorded by Thompson as a rare straggler. This gentleman enumerates (B. of Ireland, ii. p. 178) many instances of its occurrence, the first on record being one killed near Ballydrain, county of Antrim, previous to 1808. The others are as follows:—three near Dingle, county of Kerry, in February 1832; one near Swords, county of Dublin, in November 1841; one near Youghal, in November 1843; one, county of Wicklow, in October 1844; one, Killag, county of Wexford, in November 1844; one near Youghal, in October 1845; and one in the county of Kerry, in November 1846. In several of these instances of specimens having been obtained, other Spoonbills were seen but not procured.

In Scandinavia it is exceedingly rare, and Mr. Collett informs me that he only knows of two specimens having been obtained in the south of Norway—one in 1832 and one in 1836. The instances of its occurrence in Sweden are not very reliable. Linnæus wrote that it was said to occur in Westerbotten and Lapland; and Nilsson saw specimens in Paykull's and Thunberg's collection, said to have come thence; but he remarks that these gentlemen were not altogether reliable in their statements. Sadelin (Fauna Fennica, p. 25) writes that it occasionally straggles from Lapland to Northern Finland; but this may be doubted, as Professor Malmgren informs me that there is but one undoubted instance of its occurrence, one, now in the collection at Fredrikshamn, having been obtained on Högland, in the Gulf of Finland.

It has, Ulianine states, been once killed at Archangel; Sabanäeff records it from the Government of Vladimir; and Bogdanoff met with it in the spring at Lizran. Sabanäeff found it breeding on the skirts of the Shadrinsk and Cheliabiansk districts, and met with it as high as 56½° N. lat. It is, Mr. Taczanowski informs me, "accidental and very rare in Poland, and, according to Professor Kessler, equally so in the Ukraine. Tyzenhauz states that it nests in the marshes of Silesia and Lithuania, as also in Courland and Livonia. I once saw a flock of five on the Vistula, near Warsaw; and in the Warsaw Museum there is a fine male which was killed near Bozese." Borggreve records one instance of its occurrence at Danzig in June, two near Stettin, one on the Rhine; and it has been twice met with by Von Negelin on the coast of the North Sea. In Northern Germany generally it appears to be a rare bird; and it is exceedingly rare in Denmark. Kjærbölling states that he saw the head of one which was shot in Jutland, and that, according to Mr. Teilmann, it has been shot on Fanö. Mr. Scheel also showed him the head and wings of one shot in Northern Seeland in 1848; and he refers to one having been said to have been shot near the Ringkjöbing Fiord in 1850.

According to De Selys it occurs in spring and autumn on the coasts of Flanders, being rare on the Scheldt, and very rare on the Meuse. At the same seasons, but even more rarely, it visits Luxembourg. In Holland, Schlegel writes, "it is found in the neighbourhood of the large rivers, at Biesbosch, Nieuwerkerk, on the Ijssel at Rozenburg, and on the Maas; it breeds in Holland, arriving there in April and leaving in September." Baron von Droste-Hülshoff states that it has not been observed on Borkum; but he remarks (J. f. O. 1868, p. 406) that it is curious that it should be so numerous between Norden and Greetzieht, at Jüst, and Nordernei. Messrs. Degland and Gerbe write that "it is of regular passage in spring and autumn in the north of France, and is not rare at those seasons on the coasts of Picardy, Normandy, and Brittany, occurring more rarely in the central provinces." Professor Barboza du Bocage includes it in his list of the birds of Portugal as occurring at Alemtejo; and it is also found in Spain, where, as I am informed by Lord Lilford, it was "very abundant in the marshes of the Guadalquivir in May 1869: it occasionally breeds in that district. I lately obtained two eggs taken near San Lucar de Barnameda last year, 1872." Mr. Howard Saunders, writing on the ornithology of Southern Spain (Ibis, 1871, p. 394), says that it breeds in the wooded "pajareras," but is not very common; and Major Irby informs me that "it is common in the marshes on both sides of the Straits of Gibraltar, arriving in April and leaving in November. Some remain to nest near Casa Vieja."

Passing eastward again, I find it recorded by Bailly as rare in Savoy, and by Savi as also rare in Tuscany, generally occurring in the spring.

Professor Doderlein states that "it is not very common in Sicily, and is generally obtained at the time of the April and October migrations, principally about Catania, Lentini, Syracuse, and Trapani." Mr. A. B. Brooke speaks of it as common in Sardinia in the winter; and it has been several times obtained at Malta. Mr. C. A. Wright (Ibis, 1864, p. 144) writes that the only instances of its having been shot or seen there that have come to his knowledge are:—"one observed on Fort Mandel Island, in May 1858; the same or another was shot a few days afterwards at St. Paul's Bay, and another a few weeks later. Three were killed in Gozo in the spring of 1860, and another at Marsascirocco in November of the same year. One of two was killed in May 1861, and two others in June 1862. Another (young), which is in my possession, was obtained at the Salini on the 21st September, 1862." Lord Lilford writes (Ibis, 1860, p. 348), it "occurs sparingly in Epirus in severe winters. I saw a few at Livitazza in January 1858. More common in Greece about Petala and the Gulf of Lepanto. I could not hear of the occurrence of this species in the island of Corfu." Lindermayer (Vög. Griechenl. p. 153) states that "large numbers appear in the Peloponnesus and on the islands of Greece during the equinoctial gales, but remain only a short time, and then migrate towards its breeding-haunts northwards. On its return journey it is common in the Peloponnesus; but I have not observed it in Rumelia."

In Southern Germany it is found from time to time, but is not common. The Ritter von Tschusi-Schmidhofen informs me that he knows of one having been obtained in Moravia by Mr. Schwab, and a male was killed near Kagram, in Austria. Dr. A. Fritsch states (J. f. O. 1871, p. 392) that "it has been several times met with in Bohemia. In 1828 ten individuals were seen on the Bestrever Lake, near Frauenberg; but in 1863 about a hundred appeared in Southern Bohemia, evidently driven from Hungary owing to the dry season. They remained from May to August on the islands in the Municer and Bestrever Lakes, but curiously enough did not breed there." In Hungary and in the marshy country along the Danube it breeds commonly; and it is likewise recorded by Professor von Nordmann as common on the shores of the Black Sea, nesting on the trees and in the reed-beds. Ménétries (Cat. Rais. p. 50) says that it is found along the Terek river, and in the marshes near Lenkoran; and Canon Tristram, though he did not himself obtain it in Palestine, saw a specimen in a local collection at Jerusalem. Captain Shelley (B. of Egypt, p. 264) records it as "very plentiful throughout Egypt and Nubia. It may constantly be seen in flocks on the sandbanks of the river and in the great marshy lakes of Lower Egypt and the Fayoom." Dr. von Heuglin (Ibis, 1859, p. 346) met with it on the Red Sea in summer and autumn, but says that it does not occur further south than Dahalak. He remarks that the specimens he obtained were very small in size. Dr. A. E. Brehm writes (J. f. O. 1854, p. 80) that in Sudan it is replaced by *Pl. tenuirostris*, which latter species, however, is not so numerous as *Pl. leucorodia*.

In North-western Africa the present species is found. Loche records its occurrence in Algeria at all seasons of the year in considerable numbers; but he adds that he has never been able to discover its nesting-place. Mr. Tyrwhitt Drake, in his article on the ornithology of Tangiers and Morocco, speaks of it as being very rare. It occurs in the Azores, Madeira, and Canaries. Mr. F. DuCane Godman says that a Portuguese gentleman in St. Michaels informed him that "five or six had been shot at Sete Cidades a few years previously;" and Dr. Carl Bolle writes (J. f. O. 1855, p. 176), "it occasionally visits Teneriffe during the winter. Berthelot says

that one visited a garden in Santa Cruz daily to catch the gold fish in a small pond, until at last it was shot by the proprietor;" and he further writes (J. f. O. 1857, p. 339), "it often straggles to the Canaries, and has been frequently shot there. It is said to visit and remain for a long period at the Lake of Arguineguin:" Mr. Viera believes that it is a resident; but this Dr. Bolle doubts.

In Southern Africa the present species is replaced by a closely allied form, *P. tenuirostris*, Temm. (*P. chlororhyncha*, Drap.), which has the legs red, the face bare to behind the eyes, and the beak yellow.

To the eastward the Spoonbill is found in India, Siberia, and, according to Père David, is found rarely in China.

Messrs. Dickson and Ross record the present species (P. Z. S. 1839, p. 134) as found breeding at Erzeroom; and Dr. Jerdon writes (B. of India, ii. p. 764), it "is found throughout India, not perhaps in great abundance, but generally diffused, frequenting rivers, lakes, and tanks. It is generally met with in small parties, occasionally in rather large flocks; feeds in shallow water, moving its bill about from side to side, and picking up various aquatic insects and larvæ, small crustacea and mollusks, and also frogs and fish. It is very frequently seen in company with the White Ibis, both when feeding and when flying from one part of the country to another. The Spoonbill breeds, occasionally at all events, in this country, though probably many migrate to Central Asia at the breeding-season." Burgess found the nest in lofty trees; and Layard also met with them in Ceylon. Colonel Sykes, who met with the Spoonbill in Dukhun, remarks (P. Z. S. 1832, p. 159) that the Indian bird is a trifle larger than our European Spoonbill, but otherwise is absolutely identical. Professor Schlegel (Mus. Pays-Bas, *Ciconiæ*, p. 21) includes specimens from India amongst those referable to our European species, and therefore looks on them as identical. Respecting the occurrence of the Spoonbill in Siberia, Dr. Radde writes that he "can confirm Pallas's statement that it is to be met with annually on the lakes near the Selenga and Argunj. An old bird was shot on the 17th of April, 1856, on the Onon-Borsa brook; and this appears to be the time it arrives. When travelling from the mouth of the Ussuri up the river I twice saw flocks of from eight to ten individuals above the mouth of the Sungari in July. Mr. Rotscheff brought two old birds from the Upper Ussuri." Dr. Radde writes that the Siberian bird agrees precisely with European specimens; but I think it not improbable that the Japanese species may occur there. Temminck and Schlegel (Fauna Japonica, p. 119) describe two species of Spoonbill from Japan differing from each other chiefly in size, but from our European bird in having a longer bill, devoid of ridges on the upper surface, and purer in colour (in the description brownish yellow, but in the illustration pure yellow), and the naked portion of the throat is smaller. Of these two species the one, *Pl. major* (*tom. cit.* p. 119, pl. lxxv.), has the face much less bare than the second, *Pl. minor* (*tom. cit.* p. 120, pl. lxxvi.), being also larger in size. Professor Schlegel (Mus. Pays-Bas, *Ciconiæ*, p. 21) unites these two species, stating that they vary considerably in size; but he still keeps the Japanese species, under the name of *Platalea major*, separate from our Spoonbill, which, he states, is replaced by that species in Japan and Southern China. Mr. Swinhoe records a Spoonbill, under the name of *Pl. leucorodia*, as occurring at Amoy and between Takoo and Pekin; but, as above stated, Professor Schlegel refers the Chinese bird to *Pl. major*. In Australia there are two species:—*P. melanorhynchos*,

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Reich., having the bare space on the face, the beak and the legs black; and *P. flavipes*, Gould, which has the legs and beak saffron-yellow. The American Spoonbill is easily recognizable by the rosy tint of its plumage, the lower portion of the neck and the larger wing-coverts being rich scarlet; this richly coloured bird inhabits the Southern United States and South America down to Brazil. I often met with it when collecting in Mexico.

The Spoonbill frequents marshy localities, more especially in the neighbourhood of the sea-coast, and affects the open marshes in preference to those covered with high reeds or where there are bushes: mud banks and marshy localities where the soil is of clay appear to be preferred by it; and in its habitat, and indeed at a distance in appearance, it bears some resemblance to the common Stork, and like that bird it may often be seen perched on a tree at a considerable altitude from the ground; for it usually settles on a dry branch at the very top of the tree. When moving about in search of food it walks leisurely and slowly, and has a peculiarly grave and sedate gait, as if determined to quarter the ground in a thoroughly business-like manner, and not hurry itself unnecessarily. Easily distinguishable from afar, owing to its white plumage and large size, it is very shy, and it is difficult to approach within gunshot-range of it. I have myself only observed our European Spoonbill in a wild state on the Danube, where I never succeeded in shooting one; but I had ample opportunities of observing its American relative, *Pl. ajaja*, which I have repeatedly shot, but could only do so by hiding and shooting it as it passed overhead. The flight of the Spoonbill somewhat resembles that of the common Stork; it carries its neck and bill stretched straight out, as also the legs, and moves its extended wings with easy flaps, occasionally soaring in circles at a considerable altitude. I do not recollect to have heard the note of the Spoonbill; but it is described by Naumann as deep and Heron-like, and at its nesting-places it is said to be noisy. Like the Stork it makes a clappering noise with its bill, especially when angry; but it does not make so loud a sound as that species.

It breeds in Holland; but I do not find any record of its having of late been found nesting elsewhere in Northern Europe, though in Hungary and South-eastern Europe it breeds numerously. It places its nest usually on some lofty tree, if such is to be found in the neighbourhood of the marshes which it frequents; but should no trees be within reach, it nests on the low willow-bushes or in the reeds. Like the Herons it usually breeds in company, especially when it nests in trees. The nest itself somewhat resembles that of the Heron, being constructed of dry twigs and flags, lined with dry flags or rushes, and rather shallow, but wide and bulky. Messrs. Dickson and Ross, who met with it breeding near Erzeroom, write (P. Z. S. 1839, p. 134) that "several nests are placed near each other, about the middle of the river. They are made of reeds, bound together by weeds, which are piled up a few inches above the water's edge. Over this foundation dried reeds are placed in various directions to form the body of the nest, which is not lined with any thing, and is just large enough to allow one bird to sit and the other to stand."

The eggs, from three to four in number, are pure white in colour, when fresh with a faint tinge of blue, and are sparingly spotted and blotched with pale red. The texture of the shell is rough, and looks dull, almost chalky, and the pores are deep and clearly distinguishable. In size, eggs in my collection from Holland and Hungary measure from $2\frac{30}{40}$ by $1\frac{32}{40}$ to $2\frac{32}{40}$ by $1\frac{34}{40}$.

The food of the Spoonbill consists of small crustaceans, fish, small frogs, and, to some extent,

of vegetable matter, as several field naturalists who have examined the contents of the stomachs of specimens shot record the presence of vegetable matter, especially portions of water-plants. Mr. J. E. Harting examined the stomachs of the two specimens obtained at Kingsbury Reservoir in October 1865, and writes as follows:—"That of the female was almost empty, with the exception of a few small fish-bones (from their size, probably roach), a small mass of vegetable fibre, together with the fruit of a *Sparganium* and a single carpel of a *Potamogeton*, probably *P. pectinatus*. That of the male was distended with a larger quantity of small bones and remains of fish. The bones had the appearance of being ground up small, being all very much of one size, although the inner coating of the stomach was by no means rough or hard, and there were no traces of gravel or quartz, nor, indeed, of any substance which would produce or aid such a result."

The specimen figured is a living bird in the Gardens of the Zoological Society, that described being one shot in Spain by Major Irby and now in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂, *b*, ♀. Butrinto, Albania (*H. Barclay*). *c*, ♂. Spain (*Major Irby*). *d*, *pullus*. Holland (*Baker*).

E Mus. H. B. Tristram.

a, ♀. Boulai, Egypt, March 15th, 1858 (*H. B. T.*).

E Mus. Baron A. von Hügel.

a, ♂ *ad.* Bulgaria, 1872.

E. Mus. J. H. Gurney, jun.

a, ♀. Leadenhall Market, March 25th, 1867 (*J. H. G., jun.*).

Family IBIDÆ.

Genus IBIS.

Ibis, Audouin, Expl. somm. d. Pl. des Ois. de l'Egypte, &c., p. 299 (1825).
Geronticus apud Wagler, Isis, 1832, p. 1232.
Ibis, Rüppell, Syst. Uebers. taf. 45 (1845).
Comatibis apud Reichenbach, Av. Syst. Nat. p. 26 (1850).

Many authors have subdivided the Ibises into numerous genera; and the two latest authorities who have written on the subject both separate the single species we have in the Western Palæarctic Region from the genus *Ibis*—Mr. D. G. Elliot placing it in the genus *Comatibis* (P. Z. S. 1877, p. 493), whereas Dr. Anton Reichenow (J. f. O. 1877, p. 149) places it with *Ibis calva* and *Ibis papillosa* in the subgenus *Geronticus*; but it appears to me unadvisable to remove it from the genus *Ibis*, where I have accordingly placed it. The Ibises inhabit the Palæarctic, Oriental, Australian, and Ethiopian Regions, only one species being met with in the Western Palæarctic Region. They frequent damp and marshy as well as dry and even arid localities, walk with ease, and in wet places wade into shallow water. They feed on worms, reptiles, and insects; and some species are said to devour offal. They breed in the clefts of rocks or on trees, and deposit bluish-white eggs either unmarked or spotted with rufous.

The type of the genus is *Ibis æthiopica* (Lath.), the Sacred Ibis of the ancient Egyptians, a species which cannot fairly be included in the avifauna of the Western Palæarctic Region, though a specimen has been obtained near Damietta by Mons. Filliponi (Gurney, Rambles of a Naturalist, p. 298). As this species has, therefore, not been included, I give the generic characters of the Red-cheeked Ibis (*Ibis comata*), which has the bill elongated, gradually curved towards the tip, rather broad at the base, the upper mandible grooved along the sides; nostrils basal, elongated; head to behind the ear and the nape and the upper part of the neck bare; feathers on the upper neck elongated and narrow; wings long and full, the second quill longest; tail rather long, rounded; legs long, stout, the tibia bare on the lower half; tarsus covered with roundish scales; toes stout, strong; claws stout, curved, rather blunt.



Hanhart imp

REDCHEEKED IBIS.

IBIS COMATA

IBIS COMATA.

(RED-CHEEKED IBIS.)

Ibis comata, Ehr. in Mus. Berol.
Geronticus, spec. nov. ex Aegypto, Wagler, Isis, 1832, p. 1232.
"*Ibis comata*, Ehr.," Rüpp. Syst. Uebers. taf. 45 (1845).
Geronticus comatus (Ehr.), Rüpp. op. cit. p. 122 (1845).
Comatibus, Reichenb. (*Ibis comata*, Ehr.), Av. Syst. Nat. p. 26 (1849).
Ibis calvus, Levaill. jun. Expl. Scient. de l'Algérie, pl. 12 (1850, nec Bodd.).

Figuræ notabiles.

Rüpp. *l. c.*; Levaill. jun. *l. c.*

Ad. capite, gulâ et gutture medio nudis incarnato-rubris, pileo nigro: cervicis et colli plumis elongatis, acuminatis, nigris viridi nitentibus: corpore suprà et subtùs, alis et caudâ nigricantibus, æneo-viridi nitentibus: tectricibus alarum minoribus chalybeo-purpureis: rostro et pedibus saturatè incarnatis: iride rufescenti-aurantiacâ.

Adult Male (Euphrates, 20th February). Plumage generally dark metallic coppery green or bottle-green; crown black; head and throat bare; feathers on the neck elongated, pointed, and forming a sort of ruff; lesser wing-coverts rich coppery purple; bill, naked throat, and head dull blood-red; legs dull blood-red; iris fiery red. Total length about 24 inches, culmen 5·2, wing 16·7, tail 8·5, tarsus 3·0. The tail-feathers of this species are rather peculiarly formed, having the tips abruptly acuminate.

Young (fide v. Heugl. Vög. N.O.-Afr. ii. p. 1144). Much duller in coloration of plumage; the elongated feathers on the hind neck are wanting; and the head and neck are feathered with dirty-white feathers tinged with dull rust-colour, and here and there marked with brown.

The range of this peculiar Ibis is somewhat restricted; for it inhabits only North Africa, ranging into the Euphrates valley in Asia Minor, where it was lately discovered by Mr. C. G. Danford. This gentleman sends me the following notes:—"It was while staying at Biledjik that we made the unexpected acquaintance of the Red-cheeked Ibis, identifying with it a mysterious migratory bird, of which many diverse descriptions had been given us, and which came every one knew when, but no one could tell whence.

"Biledjik is picturesquely built on the high chalky slopes of the Mesopotamian side of the Euphrates, its castle standing on a long detached rock near the river-side at the north end of the city. It was the ledges of this rock, and those of some cliffs above the other extremity of the town, which were said to be the roosting- and breeding-places of the birds in question; and abundant traces vouched for the truth of the statement.

"*Ibis comata* is a very early and regular migrant—the arrival of the first pair having taken place in February, on the day predicted by the natives. Two days after, a larger body made their

appearance, and we betook ourselves to the castle, where, from a vantage tower, we made them out to be Ibises of a strange species. As evening came on still more arrived, and from our house-top we watched them circling round the town in bands of from five to fifteen. At each gyration they dropped lower, and at last came close over our heads, flying close behind each other in single file. They could easily have been shot; but the Kel ainak being a quasi-sacred bird, it was doubtful how our Turkish host would take its destruction. However, the governor was troubled with no such scruples; and presently he and his retinue arrived bearing one of the desired birds, which he had, with great good friendship, himself killed; and he further connived at our shooting another next morning. Both specimens were males, and had been feeding on beetles and small lizards, which food is plentiful enough in the immediate neighbourhood. They certainly do not seem to stray far; and the natives assert that there are no other colonies on the river, either north or south of Biledjik. The former part of the statement is probably true, while the latter appears very doubtful."

No observer, except Mr. Danford, appears to have noticed this bird in Asia Minor; nor was it observed by Canon Tristram in Palestine; but it is found in North-east Africa, and was first discovered by Hemprich and Ehrenberg near the town of Qonfudah, in Arabia, in lat. 19° N. Von Heuglin states that he met with it on the elevated plateau of Wogara, and obtained both adult and immature birds from Hamedo. He adds that "Bonaparte gives, in error, Nubia as a locality for this bird, also Schlegel the Upper White Nile, and Brehm localities south of 12° N. lat." Mr. Blanford, who saw this bird in Abyssinia, says (Geol. & Zool. of Abyss. p. 436) that he "only met with it on the highlands, once near Senafé, and again in a large flock near Antalo." On the second occasion he received two specimens; and it appears, he adds, to be by no means common in the region traversed by him. The Red-cheeked Ibis is also found in the Atlas range. Canon Tristram writes (Ibis, 1860, p. 78):—"This extraordinary bird I never saw during my second sojourn in Algeria; but on my first visit to the Sahara in the spring of 1856 I obtained two specimens in the rocky ridges beyond Bou Guizoun, on the road to El Aghouat. Unlike the rest of its family, it resorts only to the most arid and desolate mountain ranges, where it consorts with the Raven and the Falcon. Its food, as I ascertained, consists of lizards and serpents; but it is doubtless ignorant of the flavour of tailless batrachians. It breeds in inaccessible holes of the precipices, which I was unable to reach, though I saw the birds going in and out. Captain Dastugue, of the French 'Génie,' showed me a coarse egg of a deep blue-colour, almost the size of that of the common Heron, which he believed to be the egg of this bird. It does not appear to be gregarious. The bright red legs and feet of a fresh-killed specimen are peculiarly coarse and rough in the scales, adapted evidently for rocks and sand, rather than mud and water. The bare portion of the head and neck is, as well as the bill, of a brilliant crimson."

Loche states that this Ibis was obtained at Bône; but he gives no particulars respecting its habits. I possess two eggs from the collection of this gentleman, which are pale bluish white, very faintly marked with pale rufous, and measure $2\frac{25}{40}$ by $1\frac{29}{40}$ and $2\frac{18}{40}$ by $1\frac{29}{40}$ inch.

In Western Africa the present species is replaced by *Ibis olivacea*, Dubus (Bull. Acad. Brux. 1837, p. 103), of which I have not been able to examine a specimen, but which appears to be quite distinct from the present species; for it has the head, neck, and breast brownish yellow,

and the abdomen brown. In South Africa there is another allied species, *Ibis calva*, Bodd.; and in Madagascar there are two other species—*Ibis bernieri*, Bp., and *Ibis cristata*, Gm.

The present species differs widely in its habits from most of its allies, and, strange to say, instead of frequenting only marshy localities or the more fruitful lowlands, as one would at first imagine from its general appearance, it inhabits the rocky sterile mountain range of the Atlas, and is found, it seems, in the most arid portions of that range, where it nests in crevices of the rocks. In North-east Africa, however, according to Von Heuglin (Orn. N.O.-Afr. ii. p. 1145), it is found in small flocks on elevated moors, meadows, pastures, and near mountain-streams, and appears to be more shy than *Ibis carunculata*. It feeds on Orthoptera, beetles, snails, and, according to Rüppell, on reptiles. This explorer remarks on the silent disposition of this Ibis; and Von Heuglin, also, says that he has no recollection of ever hearing its cry.

The specimen figured is one obtained by Mr. C. G. Danford in the Euphrates valley, which he has kindly given to me.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a. Biledjik, Euphrates valley, February 1879 (*C. G. D.*).

E Mus. C. G. Danford.

a. Biledjik, February 1879 (*C. G. D.*).

Genus PLEGADIS.

Numenius apud Brisson, Orn. v. p. 326 (1760).
Tantalus apud Linnæus, Syst. Nat. i. p. 241 (1766).
Ardea apud Scopoli, Ann. I. Hist. Nat. p. 87 (1769).
Ibis apud Temminck, Man. d'Orn. p. 385 (1815).
Plegadis, Kaup, Natürl. Syst. p. 82 (1829).
Tantalides apud Wagler, Isis, 1832, p. 1231.
Falcinellus apud Gray, List of Gen. of B. p. 87 (1841).
Plegadornis apud L. Brehm, Naumannia, 1855, p. 290.
Eudocimus apud Bocage, J. f. Orn. 1876, p. 300.

Although in outward form the birds belonging to the present genus resemble the Curlews not a little, they are generically widely separated from them, and belong to a distinct division, being nearly allied to the Storks and Herons. This genus is represented in the Palæarctic, Ethiopian, Oriental, Australian, Nearctic, and Neotropical Regions, only one species, the type of the genus, being found in the Western Palæarctic Region.

These birds frequent marshy places, lagoons, the shores of lakes, and the sea-shore where it is flat and suitable to their habits. They are shy and wary, difficult of approach, especially as they usually prefer open places. They feed on aquatic insects, crustacea, reptiles, &c., and frequently wade in search of food. Their flight is tolerably swift and strong, resembling that of the Curlew; but they are, as a rule, silent birds, seldom uttering their note. They breed in large morasses, usually in almost inaccessible places, and construct a loose nest of flags and aquatic plants, in which they deposit three dark greenish-blue eggs.

Plegadis falcinellus, the type of the genus, has the bill elongated, curved, tapering towards the point, the culmen grooved on each side; nostrils basal, elongated; space in front of the eye bare; head without crest; wings rather long and full, the first quill rather shorter than the third, the second and third longest; tail moderate, even; legs long, tibia bare on the lower half; tarsus scutellate; toes long, rather slender; claws moderate, slightly curved.



1/3

GLOSSY IBIS.

PLEGADIS FALCINELLUS.

PLEGADIS FALCINELLUS.

(GLOSSY IBIS.)

Falcinellus gesneri et aldrovandri, Marsili, Danub. Pannon. v. p. 42, pl. 19 (1726).
Numenius viridis, Briss. Orn. v. p. 326, pl. xxvii. fig. 2 (1760).
Numenius castaneus, Briss. tom. cit. p. 329 (1760).
Numenius mexicanus varius, Briss. tom. cit. p. 333 (1760).
Numenius ibis, Briss. tom. cit. p. 347 (1760).
Tantalus falcinellus, Linn. Syst. Nat. i. p. 241 (1766).
Ardea rufa, Scop. Ann. i. Hist. Nat. p. 87. no. 119 (1769).
Numenius igneus, S. G. Gmel. Reise d. Russl. i. p. 166 (1770).
Numenius viridis, S. G. Gmel. tom. cit. p. 167 (1770).
Tantalus castaneus, P. L. S. Müller, Natursystem, Suppl. p. 112 (1776).
L'Ibis noir, Buff. Nat. Hist. Ois. viii. p. 17 (1781).
Le Courlis vert ou Courlis d'Italie, Buff. tom. cit. p. 29 (1781).
Le Courlis brun, Buff. tom. cit. p. 31 (1781).
Tantalus viridis, Gmel. Syst. Nat. i. p. 648 (1788).
Tantalus igneus, Gmel. tom. cit. p. 649 (1788).
Tantalus niger, Gmel. tom. cit. p. 650 (1788).
Tantalus mexicanus, Gmel. tom. cit. p. 652 (1788).
Numenius falcinellus (L.), Pall. Zoogr. Rosso-As. ii. p. 165 (1811).
Ibis sacra, Temm. Man. d'Orn. p. 385 (1815).
Ibis falcinellus (L.), Vieill. Nouv. Dict. xvi. p. 23 (1817).
Plegadis, Kaup (*Ibis falcinellus*, L.), Natürl. Syst. p. 82 (1829).
Ibis castaneus (Müll.), C. L. Brehm, Vög. Deutschl. p. 606 (1831).
Ibis cuprea, C. L. Brehm, op. cit. p. 1018.
Tantalides falcinellus (L.), Wagl. Isis, 1832, p. 1231.
Ibis erythrorhyncha, Gould, P. Z. S. 1837, p. 127.
Ibis ordi, Bp. Comp. List, p. 49 (1838).
Falcinellus igneus (Gmel.), Gray, List of Gen. of B. p. 87 (1841).
Plegadornis falcinella (L.), L. Brehm, Naumannia, 1855, p. 290.
Plegadornis major, L. Brehm, ut suprà.
Plegadornis minor, L. Brehm, ut suprà.
Falcinellus bengalensis, Bp. Consp. Gen. Av. ii. p. 158 (1857).
"*Falcinellus peregrina*, Müll.," Bp. tom. cit. p. 159 (1857).
Falcinellus mexicanus (Gmel.), Bp. ut suprà (1857).
Falcinellus erythrorhyncha (Gould), Bp. ut suprà (1857).
Falcinellus ordi (Bp.), Coues, Proc. Ac. Nat. Sc. Phil. 1866, p. 96.
Falcinellus erythrorhynchus (Gould), Gundl. J. f. Orn. 1871, p. 285.

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Ibis falcinellus, var. *ordi*, Coues, B. of N.W. Am. p. 517 (1874).
Eudocimus falcinellus (L.), Bocage, J. f. Orn. 1876, p. 300.
Falcinellus rufus (Scop.), Reich. J. f. Orn. 1877, p. 146.
Plegadis falcinellus (L.), Salvin, Ibis, 1878, p. 112.

Ibis falcinelle, French; *Morito*, *Garza diabolo*, Spanish; *Mignattaio*, Italian; *Velleran*, Maltese; *Maâzet el Mâ*, Arabic; *Maiza*, Moorish; *brauner Sichler*, *Nimmersatt*, German; *Sort-Ibis*, Danish and Norwegian; *Svart-Ibis*, Swedish; *Karaväika*, *Karawaschka*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 819; Werner, Atlas, *Gralles*, pl. 5; Kjærb. Orn. Dan. taf. 33*a*; Fritsch, Vög. Eur. taf. 43. fig. 3; Naumann, Vög. Deutschl. taf. 219; Sundevall, Svensk. Fogl. pl. 77. fig. 3; Gould, B. of Eur. pl. 311; id. B. of G. Brit. iv. pl. 47; id. B. of Austr. vi. pl. 47; Schlegel, Vog. Nederl. pls. 201, 202; Roux, Orn. Prov. pl. 309; Audub. B. of Am. pl. 358.

Ad. fronte et facie frontali viridi-nigris metallico nitentibus: capite reliquo, collo, regione interscapulari, tectricibus alarum minoribus et corpore toto subtùs lætè æneo-rufescentibus, dorso purpureo-nitente: corpore reliquo suprà, alis et caudâ nigricantibus viridi et purpureo nitentibus: subcaudalibus purpureo-nigris: facie frontali nudâ plumbeo-cinereâ: rostro et pedibus nigricanti-cinereis: iride fuscâ.

Juv. capite, collo, dorso et corpore subtùs haud rufis sed saturatè fuscis, corpore suprà minus nitente, capite et collo superiore albo striatis.

Adult Female (Barcelona, 10th May). Forehead and fore part of the head greenish black, with a metallic gloss; rest of the head, neck, fore part of the back, edge of the shoulder, and underparts generally rich deep copper-brown; back slightly glossed with purple and violet-purple; rest of the upper parts, including the rump, upper tail-coverts, wings, and tail blackish, richly glossed with purple and green; under tail-coverts rich purplish black; bill dark slaty blackish, bare portion at the base slate-grey; iris brown; legs blackish grey. Total length about 22 inches, culmen 5·2, wing 11·5, tail 4·7, tarsus 4·0.

Adult Male. Resembles the female, but is rather larger in size.

Young (Madagascar). Differs from the adult in having all the reddish brown in the plumage replaced by dark dull brown; and the upper parts are much less glossed, the head and upper neck are finely striped with white, and the bill and legs are much paler than in the adult.

Young in down (Sarepta). Covered with rather short, close, black down, with a broad white band over the crown; legs and bill yellowish, the latter black at the base and tip, and with a central black band.

The range of the present species extends over Central and Southern Europe, Africa as far south as the Zambesi, Asia as far east as Cochin China, and southward to Australia; and it is also found in the Southern States of North America, southward at least as far as Mexico.

In Great Britain it only occurs as a rare straggler at irregular intervals, though it would appear that formerly it was more numerous than it now is. There does not seem to be any thing to show that it has bred with us; and it has usually been obtained on the autumn passage. Yarrell cites instances of its occurrence in Cornwall, Devonshire, Surrey, Berkshire, Kent,

Sussex, and Shropshire, &c.; but it appears to have been more common on the east coast than elsewhere.

According to Mr. Lubbock the Glossy Ibis was often enough seen in Norfolk in the latter years of the seventeenth century, and was well known under the name of Black Curlew, but since about the year 1800 it is only known as a rare and uncertain straggler. Mr. Stevenson (B. of Norf. ii. p. 191) cites the following instances of its occurrence there, viz.:—One shot in the winter of 1818 near Lynn, and two killed at Hockwold fen (*Sheppard and Whitear*); two shot and four more seen at the mouth of the Norwich river in September 1824 (*Paget*); two killed near Yarmouth in January 1825 (*Lombe*); one near Cromer 1829 (*Hunt*); one near Norwich in October 1833 (*Lombe*), one shot on Blundeston Marsh, near Lowestoft, on the 27th May 1850 (*J. H. Gurney*); one seen near Yarmouth in January, and one shot at Stalham on the 13th September 1868. Mr. Cordeaux (B. of Humb. Distr. p. 107) says that one was shot in the autumn of 1869 near the mouth of the Trent, and one at Filey in 1863; and Selby refers to one, in his possession, as having been killed on the banks of the Coquet.

In Scotland it is rarer than in England; but it has been met with as far north as Shetland. Mr. Robert Gray writes (B. of W. of Scotl. p. 286) as follows:—"This straggler has never, to my knowledge, been met with in the west of Scotland, except in a single instance mentioned by Macgillivray—a specimen having, according to that writer, who saw it, been shot in Ayrshire. No date is given.

"On the east coast one of these birds was shot in September 1842, in Fifeshire, by Mr. Hepburn, who communicated the circumstance to Mr. Yarrell. A third specimen appears to have been obtained near Banchory, in Kincardineshire, on the property of Sir James Burnett, Bart., about the year 1844. This bird, as I have been informed by Mr. Angus, was presented to the late Professor Macgillivray, in whose work, however, no particulars are given, although the simple circumstance is noticed." According to Dr. Saxby one was shot at Stove, in Unst, in October 1862; and Mr. Dunn informed Mr. R. Gray that one was shot near Kirkwall in October 1857.

In Ireland, according to Thompson, it appears as a rare straggler late in the autumn or early in the winter.

It has not been met with in Greenland; but, curiously enough, five are said to have been obtained in Iceland, one of which, Mr. J. Collin says, is now in the Copenhagen Museum. Mr. H. C. Müller states that it has once occurred in the Færoes; and my friend Mr. Collett says that it has on several occasions been met with in Norway. One was shot near Bodö in 67° N. lat. in 1835; and subsequently one was obtained at Imsjö, in Ringebo; one was seen by Collett himself at Drammen in July 1862; two were shot in 1848 at Bergen, and one near Christiania in the autumn of 1839. One was seen by Baron E. Wedel-Jarlsberg near Fornebo. Nilsson says that it occurs as a straggler in Southern and Central Sweden, in Skåne, on Gottland, and in Södermanland. It has once occurred in Finland, a single specimen having been obtained on Kuustö, near Åbo, in the summer a year or two prior to 1830. It is not included by Sabanäeff as occurring in Central Russia; but Artzibascheff says that is very common near Astrachan and on the lakes south of the Sarpa. It is of accidental occurrence in Poland; and Borggreve says that it is a rare straggler to North Germany. Boeck records it once from Prussia, Schäfer from

the Moselle, Naumann once from Anhalt; and Gloger says that it is not rare in Eastern Silesia. According to Collin it has on several occasions been met with in Denmark. Teilmann saw it on Fanö in September 1826. It has been killed at Frederiksstad; one was shot near Neuhausen, and one at Seedorff Lake, near Segeberg, in October 1825.

It is a very rare and accidental straggler to Holland, Belgium, and the north of France; but it is frequently numerous in the south of France, and, according to Baron J. W. von Müller, a few breed in the Camargue. Professor Barboza du Bocage, in his list of the birds of Portugal, says that it is not rare in Alemtejo; and in Spain it is numerous in many localities, and breeds in the marismas near Seville. I met with it near Barcelona and Valencia; and Colonel Irby observed it near Gibraltar in April and May, and says that it breeds in the Soto Torezo, near Vejer, and in the marismas of the Guadalquivir. Lord Lilford, in a letter to me respecting this bird, says:—"It is by no means uncommon in the marismas of the Guadalquivir in April and May. We were assured that it breeds in that district, but did not meet with a nest, nor have I ever received the eggs of this species from Spain."

Mr. Alexander von Homeyer met with the Glossy Ibis in flocks on the Balearic Isles from the 15th to the 25th of May, and adds that a Frenchman saw them as early as the middle of April.

In Italy it occurs regularly on passage, remaining about a month in the spring; and, according to Mr. A. B. Brooke, it is met with in Sardinia not uncommonly during the winter. Mr. C. A. Wright remarks that it is a pretty regular visitor to Malta in spring and autumn in small flocks, and sometimes a solitary one is seen accompanying a flock of Lesser Egrets.

In Southern Germany it is not uncommon in many localities, becoming quite common towards the south-east. Dr. Fritsch says (J. f. O. 1871, p. 390) that it has several times been killed in Bohemia; the late Mr. E. Seidensacher informed me that it has occurred near Cilli, in Styria; and Messrs. Danford and Harvie-Brown write (Ibis, 1875, p. 426), in Transylvania "solitary birds are not uncommonly met with during the spring migration. We saw one which had been killed last year at Görgény; and another was sent to us from Hátzeg. It also occurs on the Strell and Alt rivers." In Hungary and on the Lower Danube it breeds commonly, and is numerous in Turkey in the summer, as also in Southern Russia.

In Greece it is a migrant, arriving late in March and early in April, and after remaining a few weeks goes further north; and Lord Lilford informs me that it occurs frequently in Corfu and Epirus. I find but meagre details respecting its occurrence in Asia Minor; and Canon Tristram says that it is very rare in Palestine. According to Captain Shelley (B. of Egypt, p. 262), "the Glossy Ibis ranges throughout Egypt and Nubia, where it remains during the year, but is not very abundant. I only met with it on one occasion, near El Kab, in April, where I saw three feeding together in a small pool, and procured two of them." Rüppell also says that it is a resident in North-east Africa; and Von Heuglin writes (Orn. N.O.-Afr. p. 1134) that he met with them in pairs and flocks in spring, and also in the autumn and winter from August on passage, in Egypt, Nubia, Kordofan, Sennaar, and Abyssinia. He believes that those which occur in the summer are not breeding birds. It does not appear to be common in North-western Africa. Canon Tristram met with it at Tuggurt, and Mr. Salvin at Zana; and it occurs, Favier says, near Tangier on passage, passing further south to winter, some few remaining to

breed in Morocco. Colonel Irby says that he saw large flocks at the lakes of Ras-Dowra late in April, and adds that they were very wary.

It is found in Africa nearly as far south as the Cape colony. Verreaux records it from the Gaboon; there are specimens from Senegal in the Leiden Museum; it is recorded from Casamanse by Beaudouin, and has occurred in Sierra Leone. Hartlaub cites it as a South-African species; but Layard never met with it in the Cape colony. Ayres obtained it in Natal; Peters records it from Mozambique; I have a specimen from Madagascar; and Dr. Kirk, who records it from the Zambesi, says (Ibis, 1864, p. 334) that it is "rather common, but a shy bird, difficult to approach; its cry is loud and harsh. It feeds in marshes and near rivers, but perches on the high trees when disturbed."

In Asia the Glossy Ibis is widely distributed. It occurs on the Caspian in considerable numbers; and Mr. A. O. Hume writes (Stray Feathers, i. p. 257) as follows:—"The Glossy Ibis occurred in huge flocks in and about many of the larger inland lakes of Upper Sindh; but I never met with it in Lower Sindh. We got it in every stage, from the quite young bird, with a bill of about 3·75, and without a vestige of ruddy tint below or of purple reflections above, to the old bird in full breeding-plumage, with a bill over 5·5 in length." According to Dr. Jerdon it is very numerous and widely distributed in India during the cold season; and it even breeds as far south as Ceylon, where Captain Legge found it nesting near Tissa Maha Rama in March 1872. It is stated to occur in Cochin China, but has not been met with in Siberia, China, or Japan.

In the Leiden Museum are specimens from Java, Borneo, Northern Celebes, and Macassar; and Rosenberg records it from New Guinea. Mr. Gould says (B. of Austr. ii. p. 286), it "has been found in every part of the vast continent of Australia at present known to us. I observed examples in the collection formed by Bynoe on the north coast; and I have seen others obtained in New South Wales and South Australia."

In America the range of this species is not well defined. Speaking of its occurrence in the United States, Dr. Coues states (B. of N.W. Am. p. 517):—"In 1817 a specimen was taken in New Jersey, and announced by Mr. Ord under the name of *Tantalus mexicanus*. Since that time it has been found at irregular intervals along our coast, chiefly in the southern and middle districts, but occasionally as far north as Massachusetts, where, however, its occurrence must be considered as accidental." Mr. C. Hart Merriam (Rev. B. Connect. p. 110) says that Linsley obtained five specimens at Stratford, Connecticut, and there is an example in the Museum of the Wesleyan University at Middletown, Connecticut, taken near there by Dr. Barrat about the year 1855. I obtained it in Texas, and found it numerous near Matamoras, in Mexico, in August, appearing earlier than *Ibis alba*. How far southward it occurs it is difficult to say, as there are two allied species—*Plegadis guarauna* (L.), which differs in having a white band, enclosing the eye, passing around the base of the bill, the latter being apparently dark red, and *Plegadis ridgwayi* (Allen), which differs in having the underparts dark, not rufous, the back and edge of the wings also lacking the rufous coloration; the head and upper neck are more rufous than in *Plegadis falcinellus*, there being no dark colour on the forehead and face, and the bill appears, from the dried skin, to be red. The former of these two species, both of which have been confused with *Plegadis falcinellus*, ranges from the Columbia river to Chili and Buenos Ayres; and the latter inhabits Peru.

The Glossy Ibis is found in Cuba, where Gundlach has obtained it on more than one occasion.

In habits the present species reminds one not a little of the Curlew; but instead of being noisy like that species, I have generally found it very silent, and, excepting when suddenly flushed, when I have heard it utter a harsh note, I never recollect to have heard its voice. I have only seen it near shallow lagoons, where it waded about in search of its food; and the country being open, I found it difficult of approach. When I was at Matamoras, in Mexico, I frequently saw Glossy Ibises at the lagoon near the town and on the banks of the Rio Grande, and shot a good many. They were usually in company with White Ibises (*Eudocimus albus*), and were exceedingly shy; but by hiding in the bushes between the end of the lagoon and the river I had no difficulty in shooting them as they passed to and from the lagoon. I used frequently to eat them, and found them excellent.

The Glossy Ibis breeds numerously in South-eastern Europe, especially in the large swampy districts in Hungary. Unfortunately, I was in that part of Europe in the early spring, and had to return before the present species commenced breeding, and am therefore unable to give a description of its breeding-habits from personal observation, but was informed that it breeds in the large morasses, in places difficult of access, and the nest, which is carelessly constructed of dried flags and leaves of aquatic plants, is placed on the bent-down large aquatic plants and on partially dry places in the marsh. The eggs, usually three in number, are uniform greenish blue in colour, much darker in shade than the Heron's eggs; and those in my collection, from the Save, vary in size from $1\frac{36}{40}$ by $1\frac{15}{40}$ to 2 inches by $1\frac{1}{2}$ inch, some being nearly oval in shape, whereas others taper much towards one end.

The food of the present species consists of aquatic insects, worms, crustacea, small frogs, &c. &c. It is said by some authors to feed on carrion; but this is doubtless an error.

The generic appellation which of late has been chiefly used for the present species is *Falcinellus*, said to have been given by Bechstein in 1803, the type being the present species; but this is certainly an error, for Bechstein speaks of the bird only as *Numenius falcinellus*, never using the latter title generically. The next generic title, in order of date, is *Plegadis* of Kaup (*l. c.*), which is the one that will stand.

Some authors cite *Falcinellus* as given by Cuvier in 1829; but this also is an error, for Cuvier (Règne Animal, 2nd ed. i. p. 527), who makes a genus under the name of "Falcinelle," the type being *Limicola platyrhyncha*, fails to give it any Latin title.

The specimens figured are an adult female and a young bird in down, with an immature bird in the background, all being those above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Seville, Spain, May 1868 (*Howard Saunders*). *b*, ♀ *ad.* Barcelona, Spain, May 10th, 1866 (*H. E. D.*). *c*, ♀. Central Volga, May 1877 (*Schlüter*). *d*, *e*, *juv.* Madagascar (*Frank*). *f*, *pull.* Sarepta (*Dr. Stader*).

Family PHŒNICOPTERIDÆ.

Genus PHŒNICOPTERUS.

Phœnicopterus, Brisson, Orn. vi. p. 532 (1760).

By many authors the family Phœnicopteridæ has been placed amongst the Anseres; and the Flamingos are certainly, in many respects, allied to the Geese; but it appears to me that they should be placed amongst the Herodii, between which and the Anseres they form, as it were, a connecting link. This genus is represented in the Palæarctic, Ethiopian, Oriental, Nearctic, and Neotropical Regions, one species inhabiting the Western Palæarctic Region, its range being given in the following article.

To some extent these birds resemble the Herons and Spoonbills in habits. They are essentially gregarious, being found at all seasons in flocks. They frequent lakes, lagoons, and the flat open shores of the sea. They feed on aquatic insects, crustaceans, worms, and vegetable matter, and wade far out in search of food. They fly with tolerable ease, reminding one somewhat of the Swan, but rise on the wing with some difficulty. Although they do not take to the water readily, yet they can and do swim with tolerable ease when out of their depth. Their cry resembles that of the Wild Goose. They place their eggs, usually two in number, on the ground, not making any regular nest, but only scraping the mud together so as to form a sort of hillock. The eggs are white in colour, about the size and shape of those of the Wild Goose; but the surface is chalky.

Phœnicopterus roseus, the type of the genus, has the bill longer than the head, membranous at the base, curved suddenly downwards from the middle, both mandibles edged with fine transverse lamellæ, the lower mandible much larger and higher than the upper one; nostrils near the middle of the bill, longitudinal, placed in a depression, covered with a membrane; the space in front of the eye, and at the base of the bill, including the chin, bare; wings moderately long, the first and second quills nearly equal and longest, the inner secondaries longer than the primaries; tail short, even; legs very long and slender, the chief portion of the tibia bare; tarsus anteriorly and posteriorly scutellate; toes moderately long, united by a membrane; claws short, stout, and blunt; neck very long and slender.



Hanhart imp

FLAMINGO.
PHÆNICOPTERUS ROSEUS

PHŒNICOPTERUS ROSEUS.

(FLAMINGO.)

Phœnicopterus, Briss. Orn. vi. p. 532 (1760).
Phœnicopterus ruber, Linn. Syst. Nat. i. p. 230 (1766, partim).
Le Flammant, Buff. Hist. Nat. Ois. viii. p. 475 (1781).
Phœnicopterus roseus, Pall. Zoogr. Rosso-As. ii. p. 207 (1811).
Phœnicopterus antiquorum, Temm. Man. d'Orn. ii. p. 587 (1820).
Phœnicopterus major, C. L. Brehm, Vög. Deutschl. p. 603 (1831).
Phœnicopterus ruber (L.), Sykes, Proc. Zool. 1832, p. 159.
Phœnicopterus europæus, Swains. Classif. of B. ii. p. 364 (1837).
Phœnicopterus platyrhynchos, L. Brehm, Naumannia, 1855, p. 290.
Phœnicopterus minor, C. Brehm, ut suprà.
Phœnicopterus erythræus, Verr. Rev. et Mag. Zool. 1855, p. 221.
Phœnicopterus blythi, Bp. Consp. Gen. Av. ii. p. 146 (1857).
Phœnicopterus antiquus, Blyth, fide G. R. Gray, Ibis, 1869, p. 442.
Phœnicopterus andersoni, Brooks, Proc. As. Soc. Beng. 1875, p. 17.

Flammant, French; *Flamenco*, Spanish; *Fenicottero*, Italian; *Fiamingu*, Maltese; *Nihof*, Moorish; *rosenfarbiger Flaming*, German; *Krasnöi-Gouss*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 63; Frisch, Vög. Deutschl. Suppl. taf. 152; Naumann, Vög. Deutschl. taf. 233; Gould, B. of Eur. pl. 287; Roux, Orn. Prov. pls. 339, 340.

♂ *ad.* albus, vix rosaceo tinctus: remigibus nigris: tectricibus alarum suprà et subtùs cum axillaribus intensè roseis: pedibus, rostro ad basin et regione oculari nudâ pallidè rosaceis, rostro ad apicem nigro: iride flavâ.

Juv. sordidè albus: capite et collo rufescente cervino tinctis: dorso et tectricibus alarum sordidè fusco notatis, tectricibus majoribus ferè omnino fuscis: pedibus plumbescentibus: rostro ad basin sordidiore.

Adult Male (Sardinia). Entire plumage, except the wings, rosy white, the tail rather more of a rosy red tinge; quills black; upper and under wing-coverts and axillaries rich deep rose-pink with a vermilion tinge; legs, base of the bill, and bare space round the eye flesh-pink; terminal portion of the bill jet-black; iris pale yellow. Total length about 44 inches, culmen 5·65, wing 16·7, tail 7·0, tarsus 12·4, bare portion of the tibia 8·2.

Adult Female (Sardinia). Resembles the male, but is rather smaller in size.

Young (Etawah). Head, neck, back, and underparts white slightly tinged with rusty buff, especially on the upper neck; back marked with dull ashy brown; wing-coverts marked with dark brown, the

larger coverts almost entirely brown; axillaries pale pink; base of the bill dull pinkish; legs dull plumbeous.

Young in down (Kirghis steppe). Covered with close down, in texture like that on a young Swan; entire plumage white, the upper parts slightly tinged with dusty grey.

This curious bird inhabits Southern Europe, the entire continent of Africa down to the Cape colony, and Asia as far east as into India; but it very rarely ranges even into Central Europe.

It has not been met with in Great Britain or north of the Baltic; but it has occurred, as a rare straggler, in Germany. Mr. A. von Homeyer states (J. f. O. 1870, p. 230) that an adult bird was caught alive at Treptow a. Rega, in Pomerania, in September 1869; and, according to Naumann, one was shot at Alzey, on the Altrhein, on the 10th of April, 1728; and in the hot summer of 1811 a flock of twenty-seven were seen on the Rhine, first at Kehl and then at Gambsheim, of which five females and a male were shot. In the same season a number of these birds were seen passing over Bamberg on the 25th June, and two were noticed from the 14th to the 16th of July at Schierstein, and a few days later at Idstein. All these birds were immature examples in the plumage of the second year.

It does not appear to have occurred in Holland or Belgium; but it is tolerably common in the south of France, and is said to inhabit the marshes on the coast of the Mediterranean from Hyères to Perpignan, and in considerable numbers the marshes of the Camargue and Aigue-Mortes. M. Adrien Lacroix says that it is becoming very rare in the French Pyrenees, though about twenty years ago it used to be often seen in Hérault. It still nests, he adds, in the Pyrénées Orientales.

In Spain and Portugal the Flamingo is common in suitable localities, and certainly breeds there. Mr. Howard Saunders, who has endeavoured to discover its breeding-haunts, writes (Ibis, 1871, p. 394):—"My principal aim during the past season has been the discovery of the breeding-places of this bird; but, owing to the drought, all the efforts of my cazadores have been unavailing; and I do not think any have nested within thirty miles of Seville for several years. Failing personal observation, I translate part of a letter from Manuel, in reply to a severe cross-examination, the composition of which must have caused the notary no small amusement; for my worthy friend is unacquainted with the arts of reading and writing, though quick enough at his arithmetic:—

"'The Flamingo always makes its nest in the flattest part of the marsh, in places where there is from three to four inches of water. The nest, which rises to about half a yard above the surface of the water, is made of mud, like that of a Swallow; its shape is almost cylindrical, but somewhat wider at the base. There is a slight concavity for the eggs, oval in shape, like the shape of the inside of a hat.

"'When the bird is sitting, she has her legs stretched out behind, hanging in the air (that is to say, unsupported), like the arms of a man when he puts them behind his back, and throws his shoulders forward. The complement of eggs is five; and the birds, when once frightened from their nests, do not return. To raise itself, the bird "scrambles" with its feet on the side of the nest till it lifts its body clear, and then it takes wing.'

"This account tallies with the oral information I have already collected, and of which I

gave a résumé on exhibiting some of the eggs at a meeting of the Zoological Society; but a well-known ornithologist pooh-poohed the idea of such a position, preferring the notion of the bird's sitting with its legs doubled underneath it—because, forsooth, to his mind, the latter position would be more comfortable. Eggs taken in 1865, which I obtained through the kindness of some Spanish friends, are larger than, but otherwise similar to, those of a Gannet (but on scraping away the chalky surface, the shell is greenish), and in shape more pointed at one end.

"An excellent observer at Málaga assured me that, amongst the many Flamingoes he had seen from the salt lake of Fuentepiedra, much frequented by those birds, but where they do not breed, he had occasionally observed a small one *red all over*; and on sending me the skin of a very rosy one, he observed, 'This bird is smallish and very rosy, but it is not the small species of which I spoke to you, that being *far more* orange-red (rojo anaranjado), whereas this is pink.' I therefore fully expect to be able to exhibit some day a skin of *Phœnicopterus erythræus*, the statement respecting this smaller ruddy Flamingo having been fully confirmed on my visits to the lake in question by a native hunter of its vicinity.

"Last year (1870) I again visited Spain, with the express object of trying some other localities where it was possible this bird might breed, having given instructions to my correspondents in the south to telegraph the moment they found a nest in their part of the country. I visited the unwholesome delta of the Ebro, nothing there; then to Majorca, nothing there either; but on my return I was assured that this bird sometimes nested in the island of Iviza. I sent a man down to some of the lakes in La Mancha with no better result, whilst I myself set out to explore the lake of Gallocanta, in Aragon, a very awkward place to get at. Arrived there, I could find no signs of a Flamingo, and all the herdsmen and inhabitants of that dreary basin agreed that the 'Gorrones,' as they called them, though abundant in winter, never *had* nested there. I could put my finger on half a dozen places in the south where they really *have* nested; but until we have had several 'años de agua,' I fear all further search is useless. This year, too (1871), I have no news." Lord Lilford writes to me as follows:—"I have been in Iviza this spring, and was assured that the Flamingo, though it visits that island, and Formentera in winter, sometimes in great numbers, has never been known to breed there."

According to Colonel Irby (Orn. Str. Gibr. p. 193), "Flights of Flamingoes are frequently seen passing near Gibraltar as early as the 4th of February and as late as the 1st of May; and they again appear in September, when immature birds are met with. I have seen flocks of thousands in the Marisma near the Isla Menor, and, by the aid of a stalking-horse, managed to shoot five at a shot. Usually they are extremely wild and shy, except during actual passage, when they alight to rest at the mouths of rivers. The note is not unlike that of the Grey-Lag Goose (*Anser cinereus*); and more than once at night I have mistaken the sound for that of these Geese."

According to Mr. A. von Homeyer the Flamingo is a winter visitant to the Balearic Islands, and he was informed that it breeds there. He once observed a pair at the Albufera, but could not ascertain if they were nesting there. Occasionally the Flamingo straggles into Savoy; and Bailly says that he obtained an adult example near Yenne, on the banks of the Rhone. In Italy it has been known to straggle as far as Piedmont; and several have been killed in Lombardy, Venice, and the provinces to the southward; but in Sardinia it is numerous. Salvadori writes

(J. f. O. 1865, p. 318):—"The number of Flamingoes which inhabit the lakes of Cagliari is extremely large; but from January till April 1863 they were not so abundant as usual, and it was with difficulty that I could obtain three specimens. They arrive about the middle of August, and take their departure in March or the first days of April. Where do they go to breed? If they obeyed the ordinary laws of migration, it seems they would have to go to more northern countries; however, the number of those which breed at the mouth of the river Rhone is said to be very small, whilst the number of those which leave Sardinia is very large. Besides, when they arrive in August, they never come from the north, but from a direction which makes one believe that they come from Africa. This is also confirmed by La Marmora in his 'Voyage to Sardinia,' and before him by Cetti." According to Mr. A. B. Brooke (Ibis, 1873, p. 34), "Large flocks of Flamingoes are to be seen all the winter through on the 'stagnos' of Scaffa and Quarto, which lie one on each side of Cagliari, moving backwards and forwards from one to another, according as they are disturbed. They also visit in considerable numbers some of the larger lagoons round Oristano. I was greatly surprised to find, as late as the 7th of June 1871, a flock of from five to six hundred of these birds still remaining about the stagno of Quarto, near Cagliari; and during the several days I watched them they showed no signs of restlessness, nor any desire to change their quarters, but seemed in every way to have settled for the summer. I was informed by Signor Cara (whom I always found most courteous and obliging in giving me any information he possessed) that it was extremely unusual for *such a large number* to remain during the summer, but that a *few* invariably did so. They certainly do not breed there now, as a sharp look-out is kept for their nests, and they could not escape observation. Amongst the flock I noticed as many adult birds as young; otherwise I should have imagined it was only the young birds of the previous year that remained during summer. Early in the day the flock was scattered all about the stagno in small parties of forty or fifty, feeding round the shores; but towards three or four o'clock in the afternoon they all collected in one long line, extending quite a quarter of a mile, near the centre of the stagno, where they slept with their heads under their wings. They were extremely wild and shy, rising a long way off, with loud harsh cries."

Mr. C. A. Wright says that it is merely an accidental visitor to Malta, where it has been generally seen in June. One was shot in May 1860, two in the winter of 1867–68 at the Salini, one late in March 1869 at Marsa Scala, and one on the 22nd of August 1870 at the Salini. The specimen killed in 1869 belonged to the small race which is generally found in North Africa.

Lord Lilford says that a birdstuffer at Corfu informed him that one was shot on the race-course of that town, but he himself never met with it. Dr. Krüper informs me it is of very rare occurrence in Greece; and in Turkey it appears also to be uncommon. It has been met with near Trieste; but I do not know of its occurrence on the Danube.

In Southern Russia the Flamingo is said to be rare on the shores of the Black Sea, but more abundant along those of the Caspian. Rickbeil says that it is sometimes seen near Sarepta. Formerly it used to be very numerous at the mouth of the Volga, but has of late years become scarce. It is said to be common near the mouth of the Emba and on the shores of a gulf in the Caspian called Mertvoï-Koultouk.

In Asia Minor it is rare; but it is tolerably numerous in Palestine. Canon Tristram writes (Ibis, 1868, p. 327):—"We were rather surprised at bringing down a Flamingo (*Phœni-*

copterus antiquorum), in fine adult plumage, on the Kishon, near its mouth, where there is scarcely any cover, and where a few were generally to be seen in winter. We also occasionally saw a flock high in the air elsewhere, but never discovered their breeding-place, though in July a very young bird was shot close to the place where we procured our first specimen."

In North-east Africa the Flamingo is very common. Captain Shelley says (B. of Egypt, p. 272), "the Flamingo is rather rare on the Nile itself, but is extremely abundant in the great brackish-water lakes of Lower Egypt, and is not uncommon in the Fayoom. On Lakes Mareotis and Menzaleh large flocks of these birds may generally be seen wading far out in the shallow water. They are very shy and difficult to approach within gun-shot, and when disturbed make a great clamour with their loud harsh voices. On the wing they look very peculiar, as they fly with their long necks and legs stretched out." Dr. Brehm says that the Flamingo is a resident in North-east Africa; and Von Heuglin states that he met with it in large flocks in the winter and spring until the early summer, and singly and in pairs on the lagoons of Lower Egypt, in the Fayoom, and near Suez. He saw a few pairs in November north of Sauakin, and in September and August between Massowa and Bab-el-Mandeb. In October 1853 he observed a flock between Woad Schelai and El Eis, near the White Nile, but could not succeed in shooting a specimen. According to Loche it is numerous on the large lakes of Algeria, where it breeds; and Mr. Salvin says (Ibis, 1859, p. 361):—"It seems to be an almost universal rule throughout the world, that where there are salt lakes, there Flamingos are found. It certainly is the case in Tunis, and the province of Constantine, in Eastern Algeria; no permanent salt lake of any extent is without them. Every one who has visited Tunis must remember the vast numbers that are to be seen in the lagoon of El Baheira and the lake on the north-western side of the town, and will recall to mind the magnificent sight of a thousand or more of these beautiful birds rising from the water at one time, the whole mass, from the colour of their expanded wings, looking like an animated rosy cloud. They are extremely difficult to approach; and I only succeeded in shooting one, which proved to be a splendid male. On dissecting the bird, I found in the gizzard nothing but the vegetable matter that grows at the bottom of these lagoons; I am therefore led to suppose that this forms the principal part of its food, and not the worms which burrow in the mud, as Mr. Darwin suggests (Naturalist's Voyage, new ed. p. 66). We found the bird equally abundant at Djendeli throughout the month of May, but obtained no certain clue to its breeding-localities or nesting-habits: the Arabs could tell us nothing; and we were unable to discover any thing ourselves." Mr. C. A. Wright observes (Ibis, 1864, p. 140):—"The Flamingo is very common on the lagoon of Tunis, where I shot two in March 1859. I know of no more striking sight than the flight of a large number of these extraordinary-looking birds, of which it is no unusual thing to see as many as five or six hundred or even a thousand together. Their long legs and necks stretched out to their fullest extent, with an African sun shining on their white bodies and crimson wings, form a spectacle which, once witnessed, must ever remain deeply impressed on the mind. They are exceedingly shy; and it was only by pursuing them for several days in a sailing-boat, and using a heavy charge of powder and pistol-bullets, that I succeeded in obtaining the specimens alluded to." "Near Tangier," Favier says (*fide* Colonel Irby, Orn. Str. Gibr. p. 193), "it passes northwards in April, May, and June, returning in August and up to as late in December. The females are the first to arrive during the autumn migration. The

males rejoin their mates in November, accompanied by the young of the previous year; the young of the year are never seen here. They are met with in large flocks on the lakes, always staying in the water, though they never swim about, and are very wary and difficult to approach. The only month in which they are entirely absent is July. Their temporary absence during other months is regulated by the quantity of water in the lakes; and as one month is not sufficient time for them to lay and hatch their eggs, they ought to nest not far from Tangier: indeed an old chasseur, worthy of belief, informed me that he had shot one which, when it fell, dropped an egg in the water." It is a rare straggler also to the islands of the west coast of Africa; for Dr. Bolle states (J. f. O. 1857, p. 339) that there is a specimen in the Leon collection, killed on Canaria; and Dr. Dohrn records it (J. f. O. 1871, p. 9) from the Cape-Verd Islands. On the mainland of Africa the Flamingo ranges south to the Cape colony. Mr. C. J. Andersson says that it is "very abundant at Walvisch Bay, Sandwich Harbour, Angra Pequena, the mouth of the Orange River, and probably in many other places on the south-west coast of South Africa—at least to the north of Walvisch Bay; it is also met with in a few inland localities, such as Lake Ngami, Lake Onondava, &c. With rare exceptions (and these not well authenticated, but merely surmised from birds being sometimes found barely able to fly) the Flamingoes do not breed in any of the coast-localities above named, nor do I know where they go to nest. All that I myself have observed, or otherwise can learn, is that on the approach of the breeding-season they all wing their way to the northward; and it is very probable that they breed on some of the less accessible and less disturbed lagoons and shallows rumoured to exist between Walvisch Bay and Great Fish Bay. The old birds always return first." According to Mr. E. L. Layard (B. S. Afr. p. 345) this Flamingo "has a wide range throughout South Africa, and has been killed, both in mature and young plumage, at the mouth of the Salt River, close to Cape Town. I am informed that it is very abundant at Verloren Vley at certain seasons; and many persons have assured me that it breeds there. Mr. Chapman also informs me that both the Flamingos found in South Africa breed on Lake Ngami, forming a large elevated nest of rushes amid the reeds that surround the lake. I saw it in great numbers at the mouth of the river flowing out of Zoetendals Vley in November." A Flamingo is said to occur in Madagascar, and, Captain Sperling says (Ibis, 1868, p. 292), is numerous on the Mozambique flats, but whether the present species or not I cannot say. There is a second species of Flamingo found in Africa, *Phœnicopterus minor*, Geoffr. (nec Brehm), which differs from the present species by its smaller size and different marking of the wing-coverts, and which has doubtless in many instances been confused with *Phœnicopterus roseus*.

In Asia the present species is found far into India. Mr. Blanford says (Eastern Persia, ii. p. 300) it is "common on the Balúchistán coast and in the Persian Gulf. In the latter, on one occasion, off the island of Hormuz, I saw a flock swimming in the sea, at least half a mile from the shore. Flamingoes are also said to be common on the Caspian. Major St. John tells me he has seen a flock on the Shiráz plain in May." Dr. Jerdon says, "the Flamingo is found, here and there, throughout India, is very rare in some parts, and is perhaps chiefly found not far from the sea-coast. It is very abundant near Madras, in the Pulicat lake; also between Madras and Pondicherry, and south towards Tuticoreen; it is also met with in the Northern Circars, at the great Chilka lake, south of Cuttack, and occasionally near the mouth

of the Hooghly and some of the Soonderbun rivers. In Central India and the Deccan flocks generally visit some of the larger tanks during the cold weather; and they are also now and then met with in Northern India. Adams states that they are not uncommon on the Punjab rivers and lakes during the cold weather." According to Mr. A. O. Hume it is excessively common in Sindh and Kattiawar, less so in Cutch and Jodhpoor (where, however, Dr. King procured it at Pallec in October), except at the Sambhur salt lake, at which place it is very abundant.

On one occasion, at least, it has straggled as far as Lake Baikal; for the Geographical Society of Iakutsk possesses the skeleton of one shot there. I have not had an opportunity of examining a specimen of *Phœnicopterus rubidus*, Feilden (Ibis, 1868, p. 496), which by some authors has been treated as belonging to the present species; but judging from the description it appears to me that it is fairly separable.

In the Nearctic Region the present species is replaced by one perfectly distinct, *Phœnicopterus ruber*, and in the Neotropical Region by *Phœnicopterus ignipalliatus*, Geoffr.

I have united *Phœnicopterus erythræus*, Verr., with the present species, because, so far as I can judge, it cannot well be separated, except as a small race; and Professor Schlegel, who has examined one of the types, unhesitatingly places Verreaux's name as a synonym of *Phœnicopterus roseus*.

In habits the Flamingo has much in common with some of the Herons, though it certainly resembles the Geese in structure much more than it does any other group. It frequents the sea-coast and the borders of large freshwater lakes and lagoons, but always such as are devoid of trees and bushes, and where it can have a wide prospect of the surrounding country. It is essentially gregarious, and is usually seen in vast flocks, breeding even in large colonies, not in single pairs; and in some parts the flocks are said to consist of several hundred individuals. It wades in the shallows in search of food, working about with its beak in the soft bottom, and is said to resemble the Spoonbill somewhat in its mode of feeding. When disturbed it rises on the wing with difficulty, and strikes the water with its wings and feet for some distance, reminding one not a little of the Swans; but when once up in the air some distance above the ground or water it flies with tolerable ease, though it appears unwilling to traverse great distances. When flying it stretches its long neck in front and its legs behind, and has therefore a very peculiar appearance. It feeds on aquatic insects of various kinds, small crustaceans, worms, and, to a large extent, also on vegetable matter. Its cry is said to resemble that of the common Wild Goose very closely, and may almost be mistaken for it. Speaking of the habits of the Flamingo as observed by him in Sindh, Mr. A. O. Hume says (Stray Feathers, i. p. 257), "Elsewhere I have seen Flamingoes in flocks of several hundreds; here they were in tens of thousands. It is a wonderful sight to see one of these enormous flocks rise suddenly when alarmed; as you approach them, as long as they remain in the water at rest, they look simply like a mass of faintly rosy snow. A rifle is fired, and then the exposure of the upper and under coverts of the wing turns the mass into a gigantic brilliantly rosy scarf, waving to and fro in mighty folds as it floats away. The Flamingo, I found, swims rapidly and well. A winged bird which fell in deep water kept well ahead of our primitive native punt, and was only secured when, after fully half a mile's swim, the bird began to be exhausted. It did not swim like a Swan, with the neck bent

backwards over the back, but with the neck nearly straight, and bent slightly forwards, jerking at every stroke, apparently, of its feet, looking in fact as if it was staggering along hurriedly in water just reaching up to its breast; but the water was really 10 or 12 feet deep; so that, if its mode of progression could not fairly be called swimming, it was at any rate treading water."

The flesh of the Flamingo has a nasty salty smell, and is scarcely fit for food, though this bird is generally very fat, the fat being of an orange-colour and very soft, almost liquid. The tongue, however, was highly esteemed by the ancients, and was considered to be a great delicacy. It is very large, and appears to consist of a number of cells infiltrated with fat; and it is with difficulty that one can cut it from the lower jaw without damaging it.

Although the Flamingo has bred very numerously and still breeds in some parts of Southern Europe, there is, so far as I know, no good and full account of its breeding-habits. Crespon gives some particulars of its breeding in Gard, but says that it makes no nest. There is, however, a most excellent account, published as far back as 1729, by Captain William Dampier, which I cannot do better than transcribe. Captain Dampier, referring to his visit to one of the Cape-Verd Islands, says (Collect. of Voyages, i. pp. 70, 71), "I saw a few Flamingos, which is a sort of large fowl, much like a Heron in shape, but bigger, and of a reddish colour. They delight to keep together in great companies, and feed in mud or ponds, or in such places where there is not much water. They are very shy; therefore it is hard to shoot them. Yet I have lain obscured in the evening near a place where they resort, and with two more of my company have killed fourteen of them at once—the first shot being made while they were standing on the ground, the other two as they rose. They build their nests in shallow ponds, where there is much mud, which they scrape together, making little hillocks, like small islands, appearing out of the water, a foot and a half high from the bottom. They make the foundation of these hillocks broad, bringing them up tapering to the top, where they leave a small hollow pit to lay their eggs in; and when they either lay their eggs or hatch them, they stand all the while not on the hillock but close by it, with their legs on the ground and in the water, resting themselves against the hillock, and covering the hollow nest upon it with their rumps; for their legs are very long; and building thus as they do upon the ground they could neither draw their legs conveniently into their nests, nor sit down upon them otherwise than by resting their whole bodies there, to the prejudice of their eggs or their young, were it not for this admirable contrivance, which they have by natural instinct. They never lay more than two eggs, and seldom fewer. The young ones cannot fly until they are almost full-grown, but will run prodigiously fast; yet we have taken many of them. The flesh of both young and old is lean and black, yet very good meat, tasting neither fishy nor any way unsavoury. Their tongues are large, having a large knob of fat at the root, which is an excellent bit, a dish of Flamingos' tongues being fit for a prince's table."

I possess several eggs of this Flamingo from Spain and Algeria, which are white in colour, the surface being chalky; and in size and shape they resemble eggs of the common Wild Goose, but are, as a rule, rather more elongated.

The specimens figured are an adult male from Sardinia, in my own collection, and a young bird in the collection of Canon Tristram.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.*, *b*, ♀ *ad.* Sardinia (*Salvadori*). *c*, *pull.* Kirghis steppes, July 20th, 1876 (*Schlüter*).

E Mus. H. B. Tristram.

a, ♂. River Kishon, Holy Land, December 11th, 1863 (*H. B. T.*). *b*, *juv.* River Kishon, Holy Land, May 1863 (*T. B. Sandwith*).

E Mus. H. Seebohm.

a. Futtegurh, India, March 13th, 1873. *b*. Palee Hurdui, March 13th, 1875. *c*. Etawah, February 11th, 1872 (*A. Anderson*).

Order V. ANSERES.

Family ANATIDÆ.

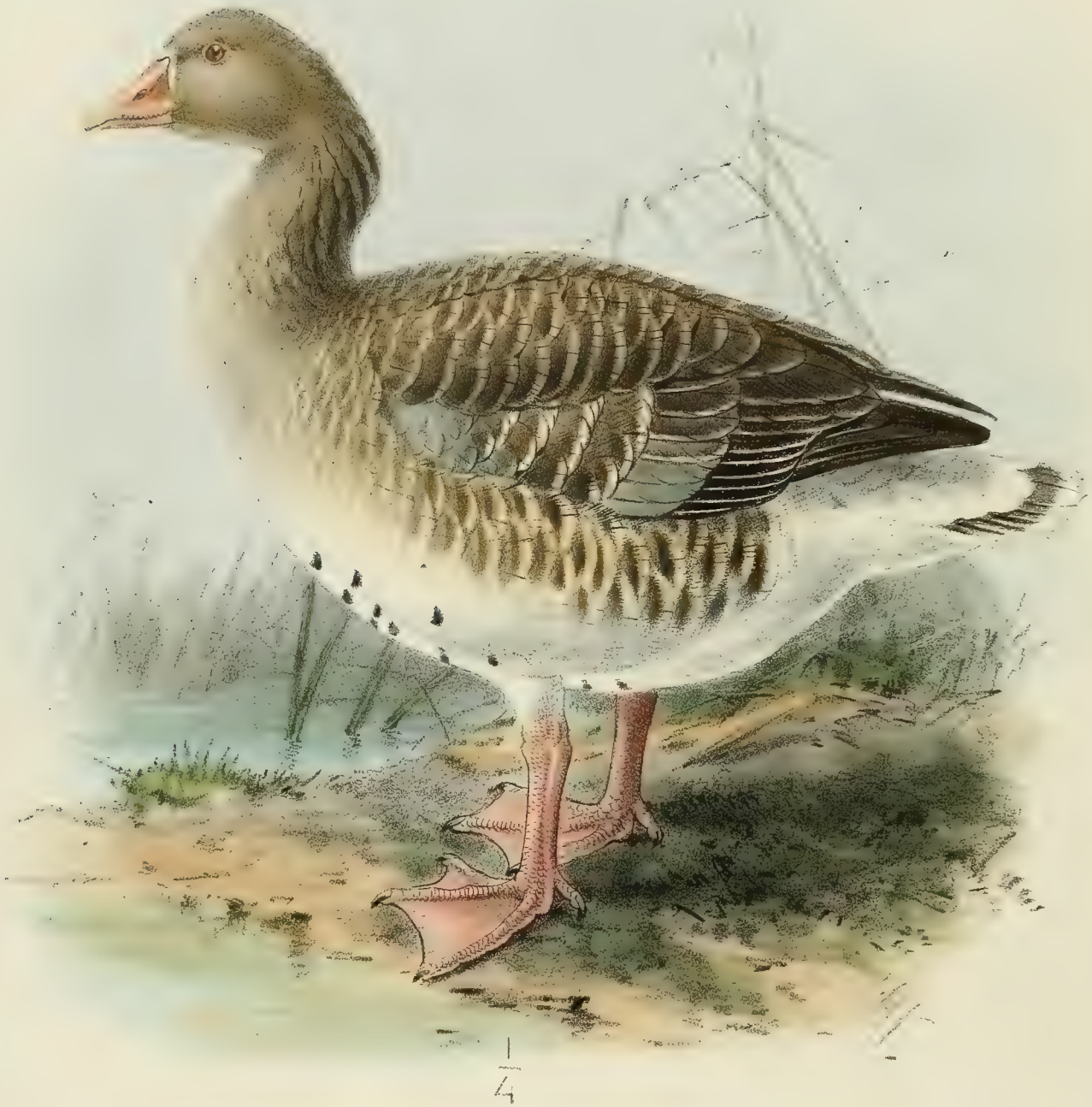
Genus ANSER.

Anser, Brisson, Orn. vi. p. 262 (1760).
Anas apud Linnæus, Syst. Nat. p. 197 (1766).
Branta apud Scopoli, Ann. I. Hist. Nat. p. 69 (1769).

The true Geese are distributed over the Palæarctic and Nearctic Regions, ranging into the northern parts of the Ethiopian Region and the Oriental Region. Five species are found in the Western Palæarctic Region, where they breed in the more boreal portions, and migrate south at the approach of winter.

They are essentially water-birds, frequenting both fresh and salt water. They swim and even dive with ease, walk well, often traversing considerable distances, and fly swiftly, often at great altitudes. Except during the breeding-season, they are gregarious, and migrate in large flocks. Their note is a rather harsh loud call, which may be heard at a great distance. They feed on vegetable substances, and usually frequent open places, where they are able to see an intruder from afar. They eat grass, the tender shoots of plants and grain, and the roots of some plants; but some Geese are said occasionally to eat insects. They nest on the ground, constructing a tolerably large nest of flags, grasses, &c., which, when the eggs are deposited, they line with down. The eggs, from six to twelve in number, are dull yellowish white without any markings.

Anser cinereus, the type of the genus, has the bill about as long as the head, subconical, higher than wide at the base, narrowing towards the tip, on which is a conspicuous nail or unguis, the sides of the upper mandible denticulated with the triangular ends of the lamellæ; nostrils moderate, oblong, placed near the centre of the bill, in the anterior portion of the nasal depression; wings large and full, the second quill longest; legs moderate, strong, placed well forward; tibia bare for a short distance; tarsus moderate, reticulate; hind toe small, placed high; anterior toes long, united to the claws by a membrane; claws short, arched, obtuse; plumage tolerably full and close, the feathers on the neck narrow and disposed in oblique ridges.



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J. Keulemans lith. Hanhart imp.

GREY-LAG GOOSE.
ANSER CINEREUS.

ANSER CINEREUS.

(GREY LAG GOOSE.)

Anser sylvestris, Briss. Orn. vi. p. 265 (1760).
Anas anser, Linn. Syst. Nat. i. p. 197 (1766).
L'Oie, Buff. Hist. Nat. Ois. ix. p. 30 (1783).
Anser cinereus, Meyer, Taschenb. deutsch. Vogelk. ii. p. 552 (1810).
Anser vulgaris, Pall. Zoogr. Rosso-As. ii. p. 222 (1811).
Anas anser ferus, Temm. Man. d'Orn. p. 526 (1815).
?*Anser medius*, Meyer, Taschenb. deutsch. Vogelk. Zus. u. Bericht. p. 231 (1822).
Anser ferus, Steph. in Shaw's Gen. Zool. xii. pt. 2, p. 28 (1824).
Anser palustris, Flem. Brit. Anim. p. 126 (1828).
Anser sylvestris, C. L. Brehm, Vög. Deutschl. p. 836 (1831).

Geadh-glas, Gaelic; *Oie cendrée*, French; *Ganso*, *Anser*, Spanish; *Oca selvatica*, Italian; *Wiz*, Moorish; *Graugans*, *Wildgans*, *Stammgans*, German; *graauwe Gans*, Dutch; *Graagaas*, Danish; *Grágás*, Færoese; *Graagaas*, *Vildgaas*, Norwegian; *Grågås*, Swedish; *Meri-hanhi*, Finnish; *Gus-zumennic*, Russian.

Figuræ notabiles.

Werner, Atlas, *Palmipèdes*, pl. 29; Kjærb. Orn. Dan. taf. 44; Fritsch, Vög. Eur. taf. 45. fig. 8; Naumann, Vög. Deutschl. taf. 285; Sundevall, Svensk. Fogl. pl. 56. fig. 3; Gould, B. of Eur. pl. 347; id. B. of G. Brit. v. pl. 1; Schlegel, Vog. Nederl. pl. 275; Roux, Orn. Prov. pls. 358, 359.

Ad. capite, collo, dorso et scapularibus cinereo-fuscis, capite immaculato, fronte vix albo marginatâ, colli plumis vix pallidiore marginatis et plumis in corpore suprà conspicuè pallidè fusco marginatis: remigibus primariis cinereis saturatè fusco terminatis, scapis albis, secundariis saturatè fuscis: tectricibus alarum, centralibus exceptis, pallidè cano-cinereis: uropygio pallidè cinereo, lateribus et supracaudalibus albis: caudâ fuscâ albo terminatâ: corpore subtùs albo, hypochondriis cinereo-fuscis albido terminatis, abdomine vix nigro guttato: subalaribus pallidè cinereis: rostro flavo-incarnato, ungue albido: pedibus flavido-incarnatis: iride fuscâ.

Juv. ubique sordidior, corpore suprà saturatiore, nec fronte albo notatâ, corpore subtùs albido nec nigro guttato.

Adult Male (Lincolnshire coast, 12th November). Head, neck, back, and scapulars ashy brown, the head plain-coloured, the crown rather darker, and a faint white line over the forehead at the base of the bill; feathers on the neck loose and furrowed with slightly lighter tips; back and scapulars darker brown with light-brown edgings to the feathers; primaries grey terminated with dark brown, the shafts white; secondaries dark brown; only the central wing-coverts coloured like the back, the rest, with the spurious wing, being ashy blue-grey; rump ashy grey, except the sides, which, with the upper tail-

coverts, are white; central tail-feathers ashy brown margined and broadly tipped with white; rest of the tail-feathers ashy brown on the outer and white on the inner web, and broadly tipped with white; underparts dull white, the flanks ashy brown broadly tipped with brownish white; a few black spots on the belly; under wing-coverts pale ashy grey; bill and legs flesh-coloured, nail and claws white; iris brown. Total length about 33 inches, culmen 2·55, wing 18·0, tail 5·9, tarsus 3·3.

Young. Differs from the adult in being darker and duller in colour, the ashy grey on the wings duller and darker, and the white on the forehead and black spots on the underparts are entirely wanting.

Young in down (Sutherland). Covered with close down; the upper parts olivaceous brown; forehead, sides of the head, hind neck, part of the breast, and the flanks greenish yellow, rest of the underparts yellowish white; bill and feet flesh-coloured.

This Goose, the original stock from which our domestic Goose has sprung, is widely distributed throughout the Palæarctic Region, ranging south in winter to North Africa and India, but it does not occur in America. In Great Britain the Grey-lag Goose is only a winter resident or found on passage in the southern counties, but it breeds regularly in the north of Scotland. It occurs here and there, though rarely, on the south coasts of England; and though it used to breed regularly in the Lincolnshire and Norfolk fens up to the end of the last century, it is now, Mr. Stevenson informs me, only a somewhat rare straggler. Mr. Cordeaux writes (B. of Humber District, p. 147) that "though at one period a permanent resident in the Humber district, breeding in considerable numbers in the fens of Lincolnshire and carrs of Yorkshire, and is probably the originator of the present domestic breed, now it only occurs in the autumn as a rather rare wanderer." In Northumberland and Durham it is, Mr. Hancock says, "a casual visitant. This Goose occasionally occurs in winter, singly, or in twos or threes, but never in large flocks. It does not appear with sufficient regularity to entitle it to rank as an annual visitant."

In Scotland, Mr. R. Gray writes (B. of W. of Scotl. p. 339):—"Being a permanent resident in the Long Island, this species is perhaps the best-known of all the wild geese which frequent that extensive district. The Grey-lag breeds in nearly all the islands of the outer group. It is common in North Uist, Benbecula, and South Uist, and is found occupying the breeding-stations early in May. Mr. Harvie-Brown took a nest of eggs which were hard sat upon on 2nd May 1870; but Mr. Elwes, who visited the Long Island in 1868, saw flocks of as many as thirty together later in the season. The nest, which resembles that of a Great Black-headed Gull when found breeding upon heath-clad islands, with the exception of being lined with down and feathers, is generally placed in a tuft of coarse grass, or among rank heather, and contains from four to six eggs. When the young are fully fledged they keep together in a family group for some weeks, and are often seen shifting their quarters from one side of the island to the other. I have noticed small flocks of seven or eight birds in the beginning of August; and a month later I have observed as many as forty or fifty; but about the middle of October the various families collect into still larger flocks, and continue together until the month of April following, when they break up for the season."

It still breeds regularly in Sutherlandshire; and Mr. J. A. Harvie-Brown says:—There it "is still a plentiful species; but I am sadly afraid it will before very long, unless stringent

measures be taken, become extinct as a breeding-species in Sutherland, as the nests are constantly pillaged, and the birds shot by keepers and others at every opportunity. I plead guilty, in one instance only, of having shot a female from her nest, in order to obtain a specimen. On one loch a person told me that he had killed no less than ten old geese, shooting them on the same day, as they rose from their nests—thus destroying altogether about sixty birds, young and old, allowing five eggs to each sitting bird. In this particular locality they seem again to have increased in numbers, whereas in most places only an occasional solitary nest is found. On the islands of this loch I believe more geese breed annually than anywhere else in Scotland, at least in proportion to the area. The average number of eggs is five or less, though I have found six in the same nest. Young birds are easily reared from the eggs; but I believe that these never interbreed with the tame or domestic Goose, along with which they will feed in the same yard, though almost invariably keeping at a little distance from them. If they were more strictly confined along with the domestic birds, possibly they might interbreed; indeed an instance did occur in 1849, in the Zoological Gardens in London, as related, if I remember correctly, by Darwin." In Shetland, according to Dr. Saxby, "this Goose may be regarded almost as an accidental visitor, occurring in autumn or spring during bad weather, and never remaining beyond a few days. Two were killed in North Mavine about eight years ago. It is said to have been shot frequently in Unst; but I never saw it during the whole period of my residence there."

In Ireland this Goose is only an occasional and, I may add, a rare visitor. Mr. Thompson (B. of Ireland, iii. pp. 28–30) gives various instances of its occurrence in that island, and adds that probably it used to breed there, which does not appear to be the case now in any part of the island.

It has not been met with in Greenland; and it is very doubtful if it has ever straggled as far as Iceland. Mr. H. C. Müller states that it used formerly to breed numerously in the Færoes, but it has not done so for the last thirty years or more, and only occurs during the two seasons of migration. According to Mr. Collett it breeds numerously on the islands of the western and northern coasts of Norway, being most numerous from the Trondhjems fjord northward to Alten, in 70° N. lat. Sommerfelt says that it is usually met with in Finmark in spring; but it is said to breed on Tamsö, in West Finmark. South of Stadt it breeds only here and there on the coast off Bergen Stift, as, for instance, in Söndfjord, and down to the islands off Stavanger, in 59° N. lat. On passage it follows the line of coast, and is seen inland much less frequently than the Bean-Goose. It winters on all parts of the coast south of the Trondhjems fjord. Some authors have recorded it as occurring in Spitzbergen; but this has since proved to be an error, as the only Grey Goose found there is *Anser brachyrhynchus*, which was mistaken for the present species. In Sweden the Grey-lag Goose is generally distributed, during the breeding-season, from Skåne up to the extreme north, arriving late in April and leaving for the south again late in August. In Finland it breeds along the coast from near Wiborg right up to the top of the Gulf of Bothnia. I used frequently to procure its eggs near Uleåborg, where it was common; and I have also seen it, during the nesting-season, at Ijå and on the Kemi river. It arrives in Finland early in May, and leaves from the early part of August to September. In Russia it ranges at least as far north as Archangel; but Messrs. Seebohm and Harvie-Brown did not meet with it on their journey along the Petchora river. Mr. Sabanäeff says that it breeds numerously

in the south-eastern portion of the Ekaterinburg and Shadrinsk districts in the Ural, in the former as far north as 56° N. lat. It does not breed near Ekaterinburg itself, but is said to do so in the district of Tebitsk.

It does not appear to breed in Poland; for all that is said about it by Mr. Taczanowski is that it is somewhat rare there at the two seasons of migration.

It is met with in continental Europe chiefly on passage, though it nests here and there in several countries, even as far south as Spain. It breeds in North Germany, but only as a straggler, or at least not commonly, and has been found nesting above Magdeburg, near Danzig and Stettin, and on several lakes in Mecklenburg. Mr. Pässler says (J. f. O. 1856, p. 66) that it breeds every year, and not uncommonly, in Anhalt, on the Badetzer lake, and on the Diebziger moors; and Naumann records it from the same localities. It does not winter in Germany, but is a migrant, arriving late in February or early in March, and leaving again in October or November. In Denmark it occurs, and breeds throughout the country, in suitable localities, and is not uncommon. According to Professor Schlegel it occurs on passage in Holland, arriving in October, and occasionally remains over the winter during mild seasons. In Belgium and France it occurs on passage, and occasionally, when the weather is mild, during the winter; and it also occurs, though rarely, in Portugal.

In Spain, Colonel Irby says (Orn. Str. Gibr. p. 195), this Goose "is found in winter at the Laguna de la Janda and in the various lagoons of the marismas of the Guadalquivir in enormous numbers. They generally arrive at the former place about the 20th of November, the earliest that I noticed in two consecutive years being on the 8th of November and the 25th of October. Commencing their departure about the 14th of February, they are all gone by the first week in March, and seem for the most part to migrate by day. Although, like Ducks, they 'flight' at night (though, as a rule, rather later in the evening and later in the morning), they affect particular favourite spots and pools without any apparent reason for their likes and dislikes, some places never being frequented by them." Since this was written, however, Colonel Irby has ascertained that it occasionally breeds in Spain, and has obtained several eggs from there, one of which he has given to me.

It Italy it occurs during passage and in winter, but does not appear to be common; but it is said by Mr. Brooke to be tolerably numerous in Sardinia during the cold season. In Southern Germany it is not uncommon; and Dr. A. Fritsch states (J. f. O. 1872, p. 368), "It is the only species of Wild Geese which breeds in Bohemia. Not more than twenty years ago I found Grey-lag Geese breeding in the immediate vicinity of the shooting-box Wohrad, near Frauenberg, and they allowed me to approach to within a distance of 100 paces. They have disappeared from this locality now, but were found breeding only a few years ago in the district of Cirnic, near Budweis; but they were driven away from that place by the erection of a rifle-range near their breeding-place. Some are said to breed in the Wittingau district. Before the ponds of Pardubic were drained they used to breed there too." Messrs. Danford and Harvie-Brown say that it is common in Transylvania, occurring in large flocks during passage; and I saw several flocks of Wild Geese (apparently Grey-lags) on the Lower Danube. Messrs. Elwes and Buckley (Ibis, 1870, p. 339) found it "plentiful in Macedonia, and not uncommon in Bulgaria, where it breeds;" and, according to Dr. Krüper, it is common in Greece in winter; and Lord Lilford

writes (Ibis, 1860, p. 350), it was "common in February 1858, on the west coasts of Continental Greece, about Petalà and the plains of Acheloüs, where we shot several. I have seen Wild Geese in most parts of Epirus and Albania that I have visited, but could not make out whether they belonged to this species or to *Anser segetum*." I do not find any particulars of its occurrence in Asia Minor; and Canon Tristram did not meet with it in Palestine. It does not appear to have been met with in North-east Africa; but Loche records it from Algeria, and Mr. Taczanowski met with it in December on Lake Fezzara. According to M. Favier it is numerous near Tangier, arriving in November and December, and leaving again for the north in March.

In Asia the Grey-lag Goose ranges as far east as China, but it does not appear to occur in Japan. It has been obtained at Erzeroom; but Mr. Blanford states (E. Pers. ii. p. 303) that it does not appear to have been noticed in Persia or on the Caspian. According to Dr. Jerdon (B. of India, ii. p. 779) this Goose is "a common winter visitant to the north of India, extending its migrations to Central India, but rarely seen further south. It is sometimes met with in small parties of from four to twenty, occasionally in vast flocks, which feed on young corn, grass, &c., and during the heat of the day rest on some sandbank in the large rivers, or in the middle of a tank." Mr. Hume writes (Stray Feathers, i. p. 258), it is "excessively abundant along all the greater rivers of the Punjab, but least so on the Indus, in Sindh. We met with it, but comparatively rarely, in the neighbourhood of lakes, and once or twice feeding in the fields. It is not nearly so common in Sindh as in many parts of the North-western Provinces." Dr. Severtzoff states that it breeds in Turkestan; and Mr. Scully writes (Stray Feathers, iv. p. 197), it is "a seasonal visitant to Káshgharia, where it breeds. The first specimen of this species which I got was shot near Yarkand on the 28th February; in the early part of March they were often seen flying over the fort at Yarkand, and going straight north. The bird is said to breed plentifully near Maralbashi, but not in the immediate vicinity of Yarkand; young birds were captured about the beginning of June."

In Siberia the Grey-lag Goose appears to be restricted to the Amoor country, and is not common. Dr. Radde says that "the first pair were seen on the 26th of March on the Tarei-nor; on the 18th of April the first eggs were found, usually only two in one nest; and on the 8th and 12th September 1856, many of the Grey-lag Geese migrated southward over the Tarei-nor;" and Dr. Schrenck writes as follows:—"One example of this species, received through Mr. Maack from the head-waters of the Amoor, which had been shot on the 28th of April (10th May) in the vicinity of Nertschinsk, agrees with the European species. I have no doubt that this species occurs also in the Lower Amurland, though I did not capture any there." Colonel Prjevalsky, in his notes on the ornithology of Mongolia (Rowley's Orn. Misc.), writes as follows:—"We found *Anser cinereus* breeding in S.E. Mongolia and in the Hoang-ho valley, where we discovered nearly fledged young on the Tsaidemin-nor, as also adult birds—the males moulting so completely that they could not fly, but tried to escape from our dog by running, when they performed all sorts of tricks, making short turnings or suddenly stopping, and running backward in order to mislead the dog; and in the most hopeless cases they tried to hide themselves in the uneven ground.

"In spring these Geese arrive in S.E. Mongolia about the middle of March, or perhaps

earlier, and in Tsaidam about the 18th of February. At Koko-nor they were rather common in the latter part of March; and in the middle of October we also noticed several pairs on passage. In the Hoang-ho valley the autumnal migration commences in the end of August; but in the Kan-su we did not see it; for we only observed six water-birds there, one of which (*Anser indicus*) remains to breed about the sources of the river Tetunga.

"Their migration to the basin of Lake Hanka takes place in the middle of March, where they also remain to breed, but are not very numerous in autumn, when all the other species of Geese are abundant.

"It is not so shy and wild as its congeners, and usually keeps in small flocks." According to Mr. Swinhoe it is found near Shanghai in winter, but it has not been met with in Japan.

Though somewhat heavier in general appearance and in its movements than the Bean and White-fronted Geese, the Grey-lag Goose is a far more graceful and slighter-built bird than its ally, the Domestic Goose, which it not a little resembles. It walks with ease, swims, and even dives well, and is swift and strong on the wing. When rising into the air and when settling it makes a good deal of noise with its wings; and when a flock settles down in the late evening this sound may be heard at a considerable distance. When traversing a short distance these Geese fly low, usually within gunshot-range; but when on passage they fly very high in a double line like a V, with the point directed forwards, an old Gander being usually the leader. In passing from one pond or sheet of water to another the Goose is said to fly first, the Gander following her.

This bird is very shy and cautious, and it is extremely difficult to approach within range of it; for it frequents very open places where it can have an uninterrupted view for some distance, and is exceedingly averse to allowing any thing strange, especially a human being, to come near it; but it will allow horses or cattle to come tolerably close, and may be stalked by walking behind either of these. It feeds, like the tame Goose, on vegetable substances, especially on tender shoots and young grass, and is fond of all sorts of grain, in search of which it visits the grain-fields; and it feeds chiefly at night, especially where it is subject to molestation, remaining during the day either in concealment, or on large open tracts of ground where it can have an uninterrupted view for some distance.

As above stated, the present species breeds in the northern portions of Europe, and rarely also in Central and even Southern Europe. The nest is placed on the ground, and is rather loosely constructed of grass, dried flags, &c. &c., is tolerably well shaped; but soon after the eggs are deposited it becomes trampled down out of shape. It is without any true lining until the eggs are deposited, when the female plucks down off her breast to cover the eggs, until her breast is almost denuded of its soft covering. When the nest is well cushioned with down it is a tolerably sure sign that incubation has commenced; and as she sits she keeps continually plucking and adding down to what is already there, so that towards the end of the incubation-term there is much more down there than previously. The eggs vary in number from six to twelve, and are not rough in texture of shell, but dull and without gloss, dull yellowish white in colour when fresh, with the faintest tinge of green. In early seasons the eggs are deposited early in March; but otherwise they are frequently not laid until May; and in Finland I generally obtained them from the 1st to the 15th of June. Eggs in my collection vary in size from

$3\frac{16}{40}$ by $2\frac{10}{40}$ to $3\frac{25}{40}$ by $2\frac{15}{40}$ inches. When the young are hatched they remain about a day in the nest, and are then conducted by the mother to the water; and when the nest is near the water, which is not always the case, they return to the nest every evening, and are covered during the night by the old bird. The young birds are often caught, and soon become tolerably tame. In Northern Finland almost all the Geese kept in confinement were, I was told, caught young and kept until fat and ready for the table; and two old women who used to assist me greatly in my egg-collecting told me that they drove a thriving trade in catching and rearing the young of this Goose.

There exists some difference of opinion amongst ornithologists as to the derivation of the word "lag" as applied to the present species. Yarrell held that "lag" is a modification of the English word lake; but Professor Skeats (Ibis, 1870, p. 301) opines (with more reason, it appears to me) that it was called the Grey-*lag* Goose because it used formerly to lag behind to breed in our fens, instead of leaving for the north with the other species.

The specimen figured is the adult male above described, and is in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Lincolnshire coast, November 12th. *b*, *juv.* Scotland. *c*, *d*, *pull.* Sutherland, May 1877 (*J. A. Harvie-Brown*).



Hanhart imp

BEAN GOOSE.
ANSER SEGETUM.

ANSER SEGETUM.

(BEAN-GOOSE.)

Anser sylvestris, Briss. Orn. vi. p. 265 (1760).
Anas segetum, Gmel. Syst. Nat. i. p. 512 (1788).
Anser segetum (Gm.), Meyer, Taschenb. deutsch. Vogelk. ii. p. 554 (1810).
Anser rufescens, C. L. Brehm, Beitr. zur Vogelk. iii. p. 871 (1822).
Anser ferus, Flem. Brit. Anim. p. 126 (1828, nec Steph.).
Anser platyurus, C. L. Brehm, Vög. Deutschl. p. 837 (1831).
Anser arvensis, C. L. Brehm, tom. cit. p. 839 (1831).
Anser sylvestris, Degland, Orn. Eur. ii. p. 294 (1849).
Anas paludosus, Strickl. Ann. & Mag. Nat. Hist. ser. 3, vol. iii. p. 124, pl. 4. fig. 1 (1859).
Anser segetum, var. *serrirostris*, Swinh. P. Z. S. 1871, p. 417.

Oie vulgaire, French; *Oca granajola*, Italian; *Vizza salvaggia*, Maltese; *Saatgans*, *Ackergans*, *Feldgans*, German; *Rietgans*, Dutch; *Sædgaas*, *Ruggaas*, Danish; *Graagaas*, *Sædgaas*, Norwegian; *Sädgås*, Swedish; *Metsähanhi*, Finnish; *Guménnik*, *Nemock*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 985; Werner, Atlas, *Palmipèdes*, pl. 30; Kjærb. Orn. Dan. taf. 45; Frisch, Vög. Deutschl. taf. 155; Fritsch, Vög. Eur. taf. 45. fig. 4; Naumann, Vög. Deutschl. taf. 286, 287; Sundevall, Svensk. Fogl. pl. 56. fig. 4; Gould, B. of Eur. pl. 348; id. B. of G. Brit. v. pl. 2; Schlegel, Vog. Nederl. pls. 276, 277; Roux, Orn. Prov. pl. 360.

Ad. capite et collo saturatè fuscis, illo saturatiore, hôc magis rufescente, fronte vix albo notatâ: corpore suprà saturatè fusco, plumis albido marginatis: tectricibus alarum saturatè schistaceo-cinereis, intimis fuscis cinereo tinctis albo marginatis: remigibus saturatè fuscis, extùs griseo schistaceo lavatis: supracaudalibus albis, caudâ fuscâ, albo apicatâ: corpore subtùs fusco-albido, hypochondriorum plumis fuscis albo marginatis: rostro ad basin et apicem nigro, fasciâ ante nares aurantiacâ: pedibus aurantiacis: iride fuscâ.

Juv. corpore suprà pallidiore, capite et collo magis rufescenti-ochraceis.

Adult (Fahlköping, 25th March). Head and neck dark brown, the head rather darker, the neck lighter and rather more rufous, forehead marked with a narrow patch of white; upper parts dark brown, most of the feathers margined with dirty white; wing-coverts dull dark blackish grey, the inner ones brownish margined with white; quills dark brown, washed externally with slaty grey; upper tail-coverts white; tail dark brown, tipped with white; underparts dirty white, the breast tinged with pale brown; flanks dark brown, the feathers tipped with white; bill blackish, crossed by a broad orange-yellow band; nail black; legs orange-yellow. Total length about 32 inches, culmen 2·35, wing 16·9, tail 5·7, tarsus 2·8.

Young. Differs from the adult only in having the head and neck tinged with dull rusty yellowish, and the upper parts altogether paler.

Obs. The male is, as a rule, rather larger than the female, and has a longer and rather stouter bill.

The Bean-Goose inhabits Europe and Asia, breeding in the high north, and migrating south to winter in Southern Europe, straggling even to North-west but not to North-east Africa; but it is not found in America.

In Great Britain it only occurs on passage, and in the winter season; and though Yarrell states that it breeds in Scotland, the Hebrides, and Westmoreland, subsequent researches tend rather to disprove this statement than to confirm it. With us it generally appears in September and October, and is sometimes seen in large flocks, especially in open portions of the country, which it appears to affect. On the coasts of Norfolk it is often numerous; and on the coasts of Lincolnshire and Yorkshire, Mr. Cordeaux says, large flocks often come with wonderful regularity at daybreak to their favourite feeding-grounds inland on the Wolds, returning at dusk towards the coast. In the autumn and spring it visits Northumberland and Durham, and is, Mr. Hancock says, "usually seen in considerable flocks, flying in lines. Berwick Hill, in the neighbourhood of Prestwick Car, was a favourite haunt of this species; and I understand it is still seen occasionally there feeding in the stubbles." In Scotland it is common in the winter season throughout the country in suitable localities near the coast, and remains in the Outer Hebrides to the beginning of June, but, Mr. Gray says, has never been known to breed there. Mr. Elwes states that it does not arrive in Islay till January or February, and the flocks are not large, but the birds are very wary. On the east coast of Scotland it is the commonest species; but it is said to be a very rare visitant to Orkney and Shetland, and Dr. Saxby remarks that he only met with it, in small flocks, twice in Unst and once in Yell.

In Ireland, as in England, it is found regularly during the winter, leaving at the approach of spring and returning again in the autumn. It does not appear to visit Greenland, but occurs in Iceland; for Professor Newton states (Ibis, 1864, p. 132) that Mr. Proctor received three or four examples from there.

In Scandinavia the Bean-Goose is widely distributed; but, according to Mr. Collett, it rarely, if ever, breeds in Norway south of 64° N. lat., though it nests commonly from Helgeland northwards to the Russian frontier, chiefly in the interior. In the south of Norway it occurs only on passage, when large flocks are seen, and in the autumn a few remain as late as October. Mr. Collett adds that "in Finmark this species would appear to breed less abundantly than *Anser cinereus*, and probably in the interior only. Its range, however, cannot yet be defined with accuracy. Both this series and the form *Anser arvensis* are recorded by Sommerfelt and Nordvi as breeding abundantly in East Finmark. Barth has observed it breeding in West Finmark, at Karasjok, where he came across a whole brood July 28th 1857, four of which, of the size of a Teal, were bagged. The young birds are splendid divers."

It only occurs on passage in Sweden, except in the extreme north, but is common both in the spring and autumn, remaining in Skåne until October. In Finland, Dr. Palmén says, this Goose breeds in about the same range as the Swan, viz. from the high north down into the

northern portion of Central Finland, and rather lower in the eastern districts. Malm says that it nests not uncommonly in Enare and Utsjoki, and it is also found in Muonioniska and Enontekis parishes, sparingly in Pudasjärvi, in Kajana; and, according to J. von Wright, it certainly breeds in Iisalmi, Northern Savolax, and possibly further south in Karelen. Elsewhere in Finland it is found only on passage.

In Russia this Goose ranges up to the coasts of the White Sea, and possibly occurs on Novaya Zemlya. Messrs. Seebohm and Harvie-Brown write (Ibis, 1876, p. 441):—"The Bean-Goose arrived at Ust Zylma on the 10th May. Small parties and sometimes large flocks continued to frequent the neighbourhood wherever there was any open water, until the ice and snow had all disappeared, when the Geese disappeared also. At Kuya, on the 19th June, we got eggs of the Bean-Goose considerably incubated. At Alexievka we not unfrequently found their nests concealed in the long grass of some hillock or islet on the banks of the lakes on the tundra, and we secured a number of eggs. We did not find any of their nests on the islands of the delta. The Bean-Goose is an early breeder, and doubtless makes its nest on the tundra before the great march-past of ice on the river is over, and whilst most of the islands are still under water. Soon after the young are hatched, before they are able to fly, these birds congregate in large flocks, and march slowly into the tundra to moult. The Samoyedes gave us glowing accounts of the grand battues which they used to have at these times, killing the Geese with sticks, and collecting large sacks full of down and feathers. Seebohm was fortunate enough to come across one of these migratory flocks of Geese. It was on the 27th July, whilst we were living in a wrecked ship on the shores of the lagoon at Dvoinik. He had crossed over to the North Twin Cape, and was skirting the margin of the river which winds inland between high banks of grass, when he heard a loud cackle of Geese. A bend in the river gave him an opportunity of stalking them. As soon as he caught sight of them a most interesting and extraordinary scene presented itself. Several hundred old Geese and about as many young were marching like a regiment of soldiers. The vanguard, all old birds, were half across the stream; whilst the Goslings brought up the rear, and were running down the steep slope towards the water as fast as their legs could carry them. Both banks of the river were strewed with feathers, where they had no doubt been feeding; and a handful of quill feathers was picked up in five minutes. They were evidently migrating to the interior of the tundra, moulting as they went along. The following day we discovered that our stock of provisions was entirely exhausted, and we sent a party after this flock of Geese. They met with them a few versts higher up the river, and succeeded in securing eleven old birds and five goslings. Most of the Geese were in full moult, and unable to fly; and Piottuch told us that both old and young made for the water, and attempted to conceal themselves by diving."

Throughout Central Russia it is said to be tolerably common on passage, though less numerous than several of its allies. Artzibascheff observed it in the northern portion of the Saratoff Government, though not elsewhere. In Poland, Mr. Taczanowski says, it is the commonest species on passage in the autumn, from late in September until the first frosts, and in the spring, from early in March to the middle of April.

Throughout North Germany it is common on passage; and Von Homeyer remarks (J. f. O. 1860, p. 372) that in Pomerania, according to the farmers, the Bean-Geese arrive about the

middle of September, and sometimes remain to the end of that month; and Mr. Schilling states that large flocks remain on the islands of the Hiddensee and Neu-Bussin, near the peninsula of Wittow, from the beginning of October to the end of November. Mr. Colling says that not only is this Goose found in Denmark on the autumn and spring passage, but in mild seasons a few remain over the winter; and Mr. Benzon also informs me that it is a tolerably common species in that country. It is said to visit Holland and Belgium more or less regularly on passage, and is seen in France annually at the same seasons, ranging down to the Camargue. Professor Barboza du Bocage records its occurrence in Portugal; and it is found in Spain, but, Colonel Irby writes (Orn. Str. Gibr. p. 195), "is much less numerous than the Grey-lag Goose; and it was some time before I could succeed in obtaining a specimen for identification. As far as my experience goes, I should say the present species occurs in the proportion of one to every two hundred of the Gray-lag; but as Favier considers both kinds equally common in Morocco, perhaps in some seasons the present species may be more abundant than in others."

Passing eastward, again, I find it recorded by Bailly as found on passage in Savoy towards the end of November, and it is likewise found now and then in the winter. It is said to be the commonest Goose that visits Italy, and is abundant in Sicily and Sardinia in winter, returning northwards in March.

In Malta, Mr. C. A. Wright says (Ibis, 1864, p. 154), "in stormy weather about the time of the autumnal equinox, and in winter, flocks of wild Geese are sometimes seen passing over the island or along the coast. They seldom make any stay, and are not very often shot. All those which I have examined were of this species." In Southern Germany it is tolerably common, but, Dr. Fritsch says, is less abundant than the Pink-footed Goose, with which species it is usually found. Von Tschusi-Schmidhofen says that it is often seen on passage in various parts of Austria; and Messrs. Danford and Harvie-Brown met with it not uncommonly during migration in Transylvania, where it occurs in small flocks. It is said to be less common in Turkey than the Grey-lag Goose, but is very numerous in Southern Russia during the winter season. It winters also in Asia Minor and Palestine, as well as in Greece, where it is usually seen, Dr. Krüper says, in company with the Grey-lag Goose, and is not rare. It does not seem to have been observed in North-east Africa, but is occasionally met with on the north-western side of that continent. Loche speaks of it as being of accidental occurrence in Algeria in winter; Canon Tristram saw a freshly killed example at Temaçin; Mr. Taczanowski notices it as being more abundant on lake Fezzara than *Anser cinereus*; and Favier considers that both species are equally common in Morocco, the present one being more numerous in some seasons than in others. I may also add that Vernon Harcourt includes the Bean-Goose in his list of the birds of Madeira.

In Asia the Bean-Goose occurs right across the continent to Japan; and it appears to be tolerably common in Siberia. Von Middendorff saw the first on the Boganida (in 70° N. lat.) on the 14th April (O. S.); and they settled down for nidification on the tundras of Taimyrland. He found a nest containing eggs on the 1st July; and on the 17th of that month the Bean-Geese began to moult on the Taimyr. In South-east Siberia he saw the first near Anginsk on the 23rd April; and the return migration commenced on the 30th August on the south coast of the sea of Ochotsk. It breeds, he adds, in the Stanowoi Mountains and on the great Schantar

Island. Von Middendorff says that the nest he found on the Taimyr was in a hollow in the top of a high tussock close to the river, about two fathoms above the water, and was a mere lining, of old grass-bents and a little down, to the hollow. Von Schrenck saw it on the Upper Amoor; and Dr. Radde says that it appeared on the Tarei-nor a few days later than the Grey-lag Goose, late in March, and the spring passage lasted till early in May. On the 11th May he saw a flock at Kulussutajeffsk; and the first were seen in the Bureja Mountains on the 25th March (O. S.). In the autumn large flocks were observed in September, and the last on the 7th October. According to Père David it is by far the commonest of the Geese which visit China in the winter; and Mr. Swinhoe received two examples from Hakodadi, Japan, where it occurs in flocks.

Referring to its supposed occurrence in India, Mr. Hume writes (Stray Feathers, i. p. 258) that he has never been able to meet with a specimen killed there, nor with any person who has done so.

Except that this Goose is said to affect more inland localities, it differs but little in habits from its allies. With us it appears in the late autumn, and remains on our coasts for the winter, usually flying tolerably far inland to feed, and returning to the coast in the evening. These birds are extremely cautious, and carefully examine the surrounding country before they alight; and even then they post a sentinel, who gives notice directly there is the least sign of any danger. They usually feed in large open fields or pastures, and eat tender grass, young wheat, and other plants, as well as grain and the roots of various sorts of grass.

The Bean-Goose swims with ease, and sits buoyantly on the water; but it rises on the wing rather heavily, and its flight is not very swift, though direct and steady. Its cry, though harsh when uttered close to one, is by means unpleasant when heard at a distance, and does not differ much from the call of the other Geese. It not unfrequently flies and feeds at night; but as a rule it prefers to feed at early dawn.

This Goose certainly breeds in North Finland; but I never succeeded in finding its nest. A forester, who had taken its eggs, told me that it does not in the least differ from the Grey-lag in breeding-habits, and, like that species, makes its nest in some marshy locality. Mr. Aschan found it breeding in Northern Savolax, and says that on the 15th June he came across a brood of six or seven young ones, with the two old birds, on a small brook in a forest above Hankalampi Träsk, and caught two of the former, which he reared. Late in July these birds were nearly full-feathered, and early in August they could fly. They became very tame, and would follow any one so soon as they got accustomed to see people.

I have eggs of the Bean-Goose which are like those of the Grey-lag Goose, but rather smaller in size, and slightly less rough in grain of shell.

The present species has been by some authors separated into two forms or subspecies—*Anser arvensis* and *Anser segetum*, which have been separated chiefly on account of size; but as this Goose varies a good deal in size, individuals differing considerably being found in the same flock, this distinction can scarcely hold good, and, indeed, but few of our present ornithologists recognize more than the one species.

The specimen figured is an adult male from Sweden in my own collection.

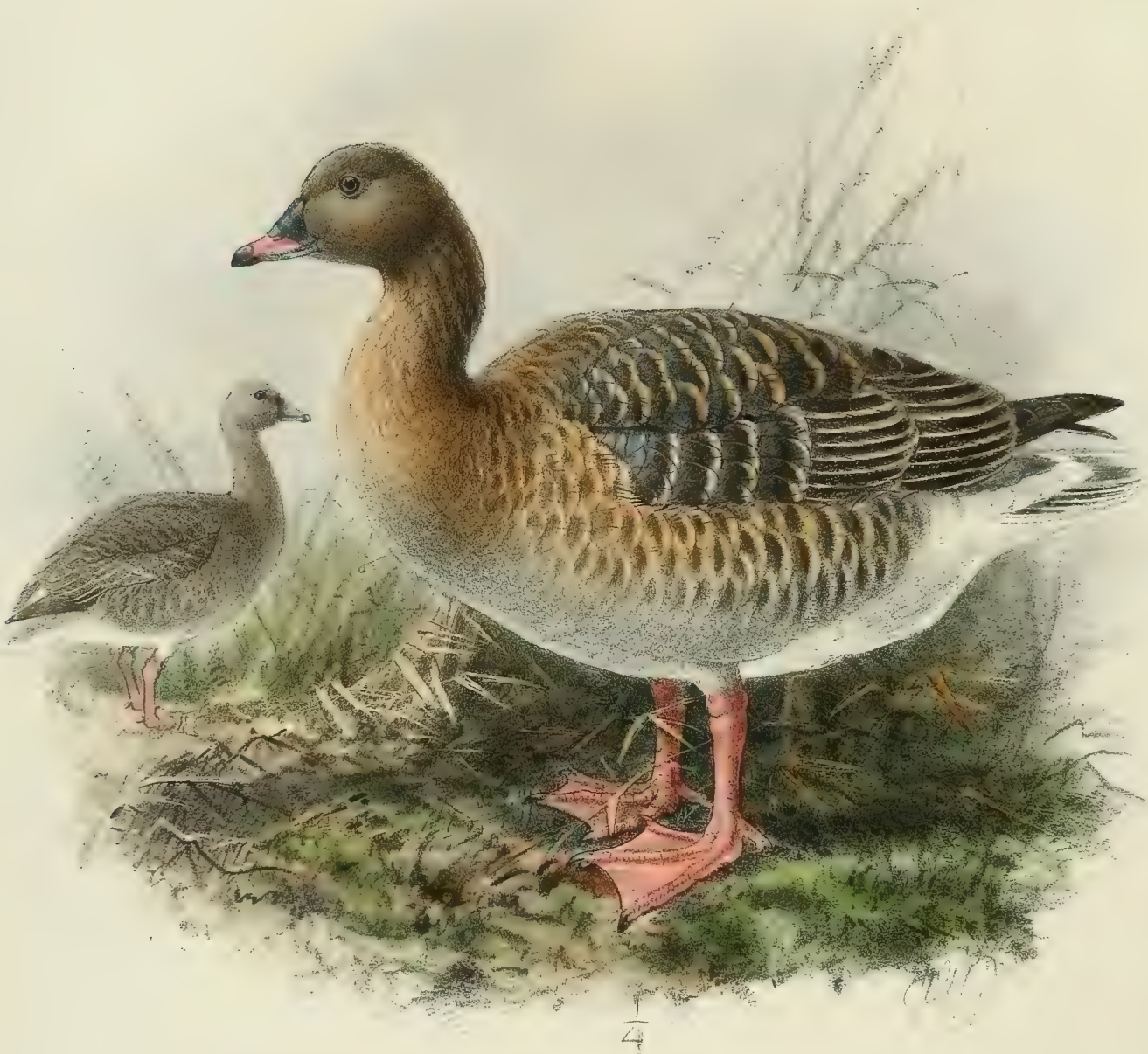
In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂, *b*, ♀. Fahlköping, Sweden, March 25th, 1871 (*Meves*).

E Mus. H. Stevenson.

a, ♂. Castle Acre, February 9th, 1871 (*H. S.*).



Hanhart imp

PINKFOOTED GOOSE.
ANSER BRACHYRHYNCHUS.

ANSER BRACHYRHYNCHUS.

(PINK-FOOTED GOOSE.)

?*Anser obscurus*, C. L. Brehm, Vög. Deutschl. p. 839 (1831).
Anser brachyrhynchus, Baill. Mém. de la Soc. roy. d'ém. d'Abbev. 1833, p. 74.
Anser phœnicopus, Bartlett, Proc. Zool. Soc. 1839, p. 3.
?*Anser segetum*, J. F. Naum. Vög. Deutschl. xi. p. 287 (1842, nec Gmel.).
Anser rufescens, Palmén, Finl. Fogl. ii. p. 339 (1873); nec Brehm, Beitr. zur Vogelk. iii. p. 871 (1822).

De kleine Rietgans, Dutch; *Spetsbergens-Sädgås*, Swedish.

Figuræ notabiles.

Frisch, Vög. Deutschl. taf. 155; Fritsch, Vög. Eur. taf. 45. fig. 6; Sundevall, Svensk. Fogl. pl. 82. fig. 1; Schlegel, Vog. Nederl. pls. 278, 279.

Ad. A. cinereo similis sed minor, capite saturatiore, nec fronte albo notatâ: collo magis rufescenti-fusco: uropygio fusco-schistaceo: tectricibus alarum saturatioribus et magis schistaceo tinctis: corpore subtùs fusco-albo, abdomine imo et subcaudalibus albis: hypochondriis et subalaribus sicut in *A. cinereo* coloratis, sed his saturatioribus: rostro ad basin nigro et ungue nigro, in parte centrali rosaceo-incarnato: pedibus rosaceo-incarnatis: iride fuscâ.

Adult (Kincardine, 12th March). In general coloration much resembling *Anser cinereus*; but the neck has a rather reddish brown tinge, there are seldom any white feathers at the base of the bill, and the head is darker; upper parts as in *Anser cinereus*; but the rump is slaty brown, the lesser wing-coverts and edge of the wing are of a darker and more slaty ash-blue; underparts brownish white, becoming pure white on the lower abdomen and under tail-coverts; flanks and under wing-coverts as in *Anser cinereus*, but the latter are much darker; bill black at the base, with a black nail, the central portion being pink; legs flesh-pink, or sometimes orange-pink; iris brown. Total length about 30 inches, culmen 1·95, wing 16·8, tail 5·8, tarsus 2·85.

Young. Resembles the adult, but has the edgings to the feathers on the upper parts rather browner, and the plumage generally is duller.

Nestling. I do not possess the young bird in down; but Professor Newton says that two he obtained in Spitzbergen "are clothed in greenish yellow down, with patches of olive on the back of the head, lore, and region of the eye, upperside of the wings, middle and lower part of the back, and the flanks; but the ground-colour of one is much darker than the other. One (the darkest) specimen, singularly enough, has on the outer edge of the middle toe and on the outer interdigital web of each foot some two or three small yellowish feathers—a fact I cannot at all explain."

Obs. Mr. Cecil Smith, who has for some time past had several Pink-footed Geese in a state of semi-domestication, sends me the following interesting note respecting the variation in colour of the beak

and legs, viz.:—"My original pair were perfectly true Pink-footed Geese, there being no suspicion of orange about the bill or legs and feet of either; the colour on these parts, however, became very pale and faded after the breeding-season, and continued so long into the autumn, but towards the end of autumn it got much brighter, the colour being most intense at the beginning of the breeding-season; it is the same with those of their young which have orange legs and bill. This pair hatched three young in 1872; of these only one reached maturity. The legs and bills of the young were all alike, very dark olive-green, showing no trace of pink as long as they were in the down; but soon after they began to assume their feathers the colour on the legs and bills began to disclose itself, and those parts in the only survivor of this brood were and still are orange. Since then the old ones have bred every year, some of the young having orange legs and bills, and some pink like their parents. This year the first orange-legged one, a female, had a brood, some of which had orange and some pink bills and legs. I have never seen any mixture of the colours, the legs and bill being either bright orange or bright pink; there seems to be no gradation between the two. As to the bills, the dark portions (that is, the nail and the base) remain the same whether the other part is orange or pink; in fact the only part of the bill that shows any change is the part which in the Pink-footed Goose is usually pink."

It is by no means easy to define the range of this Goose; for it has been so very frequently confused with its allies the Grey-lag and Bean-Goose. It was not recognized as being specifically distinct until 1833; and even many subsequent authors have confounded it with the latter species. So far as I can ascertain, it inhabits the extreme north during the breeding-season, migrating south with the other species in the autumn, and is tolerably widely distributed in South-western Europe during the cold season. It is stated to have occurred in India, and even in Japan; but its range in Asia is but poorly defined.

With us in Great Britain it is a common winter visitant, and is regularly found in considerable numbers on some parts of our coasts. It has been met with, though rarely, on our south coasts, but is common on our east coasts. Mr. Stevenson has kindly lent me the proof-sheets of his forthcoming volume of the 'Birds of Norfolk,' from which I transcribe the following notes on its occurrence in Norfolk, viz:—"The earliest record of its identification in this country is apparently the notice by Yarrell of a specimen killed at Holkham in January 1841, by the present Earl of Leicester, out of a flock of about twenty, since which time this Goose has proved to be by far the most common species that frequents the Holkham marshes. The following notes on its habits, as observed in that neighbourhood, have been very kindly supplied me by Lord Leicester for use in this work.

"'As long as I can recollect, Wild Geese frequented the Holkham and Burnham marshes. Their time of appearing in this district is generally the last week of October, and their departure the end of March, varying a little according to the season. Till November they rarely alight in the marshes or elsewhere in the neighbourhood, but are seen passing to and from the sea. Where they feed in October I know not, as I have reason to believe that they do not obtain much food off the muds like the Brents, but live much on grass or new-sown wheat. From early in November till the time of their departure for the north, the Holkham marshes have almost daily some hundreds of Geese feeding on them. There are periods of a week or a fortnight when the greater portion of them go elsewhere; but it seldom happens that all go. When on the marshes they are mostly in one or two flocks; but in stormy weather, or even on certain still days, for some unaccountable reason, they break up into small lots. My keepers informed me that one

day last week [about the middle of November 1870], which was perfectly calm and still, they were flying about in small lots very low, and that a great many might have been killed.'

"Referring also to the Goose shot by himself in 1841, and identified by Yarrell as the Pink-footed, his lordship adds, 'Of the many Geese killed here before then, I have reason to believe from their habits they were nearly all the same as those now here—that is, Pink-footed Geese; and of the many hundreds killed since, with the exception, I believe, of only one Bean-Goose and a few White-fronted, they were all Pink-footed. The greatest number obtained in one year was in the severe winter of 1860–61, when one hundred and thirty-eight were killed, all Pink-footed.'

"Mr. Dowell, who is also well acquainted with the habits of this species on the north-western side of the county, informs me that they feed in flocks of from one or two to six or seven hundred on the uplands by day, and he has known as many as twenty-seven shot in a day by sportsmen lying up for them behind gate-posts in the Holkham marshes, in a gale of wind, when the Geese fly low. On one occasion, when driving along the road in very snowy weather, at West Barsham, he saw a flock within twenty yards of a fence, but which, strangely enough, did not move, though he hallooed to frighten them. These were probably fatigued by a long flight. He has never met with this species at any time in the salt marshes and tideway at Blakeney. In 1858 he saw a flock of fifty at South Creake as early as the 13th of October; and some were said to have been seen that year on the 1st of the month. In the winter of 1869 a flock of about five hundred Geese, which were no doubt all Pink-footed, frequented some barley-stubbles within sight of his house at Dunton, near Fakenham. They used to arrive from the coast soon after daylight, and remain till late in the afternoon. The Pink-footed (like the Bean-Goose) also frequents the large upland fields about Anmer and Westacre, and still further inland the open country about Wretham heath. Their nocturnal movements may be inferred from the fact that, on one occasion, as Mr. Cresswell informs me, a fowler, named Charles Hornigold, took seven Grey Geese at a stroke in a short length of netting on the shores of the Wash, near Lynn. These birds, which were in all probability Pink-footed Geese, had so entangled themselves that the net had to be cut to get them out."

In the Humber district, Mr. Cordeaux writes (B. of Humb. Distr. p. 149), it "occurs occasionally, but never in such large flocks as the Bean-Goose. Is not unfrequently found singly, or two or three together in our marshes and lowlands, and is more easily approached than either the Grey-lag or Bean-Goose. In its habits it prefers lowlying districts and wet carr or marsh land near the coast, as a rule, not resorting to the higher wolds to the same extent as its congener, the Bean-Goose. Mr. Boulton says it is found occasionally in the neighbourhood of Beverley, and is generally flushed singly and not in flocks."

According to Mr. J. Hancock it is not an uncommon winter visitant to the coasts of Northumberland and Durham; and, referring to its occurrence in Scotland, Mr. Robert Gray writes (B. of W. of Scotl. p. 345) as follows:—"The late Mr. John Macgillivray announced many years ago that he had found the Pink-footed Goose breeding in considerable numbers on the islands in the Sound of Harris, and also on the lakes of North Uist; but subsequent observations have proved that he had mistaken the Grey-lag for that species. The Pink-footed Goose is, in fact, only found in the winter months in any part of Scotland; and, with the exception of the western islands, no locality can boast of it in any numbers. In Montrose basin it appears to be a regular

visitant in very small flocks, consisting of at most four or five birds; I have seen and carefully examined specimens in the flesh which have been shot there. On the western mainland it is even less common, occurring for the most part singly or in pairs, and mixing with other wild geese. In this way it is taken by the lessees of the west-country shootings, and sent to the Glasgow poulterers. One or two were killed in the winter of 1867–68 in the Clyde estuary. Writing from Newton, in North Uist, Mr. John Macdonald states that the habits of this bird differ from those of the Grey-lag, and that he has no difficulty in distinguishing flocks of both species when shifting their quarters. 'They arrive here,' says Mr. Macdonald, 'in October and November, in small flocks which seldom contain more than thirty birds. When watching their movements on the wing, it often occurred to me that they were very undecided, and seemed not sure of their course. I have known them go more than a mile, then turn back and afterwards take the same course, and this when not disturbed. When they alight they seem to want the faculty of knowing, as the Grey-lag does, the most dangerous places. I have seen them in parks and enclosures near houses, localities generally avoided by the Grey-lag, except when tempted by corn or young clover. I have never noticed any Pink-footed Geese after the month of January; in fact, they then appear to rest here only for about two months, and retire regularly to some other attractive habitation. Their call is so different from that of any other geese, that there can be no mistake in distinguishing them. They do not associate with the Grey-lag; but I obtained a single specimen which was shot in the midst of a flock of Bernicle Geese.'" It may very probably be found to visit Ireland, though Thompson states that he knows no instance of its occurrence there.

It has not been met with in Greenland; but it certainly occurs in Iceland, for Professor A. Newton writes (Ibis, 1864, p. 132) as follows, viz.:—"Mr. Proctor also tells me that he has once or twice received the Pink-footed Goose (*Anser brachyrhynchus*) from Iceland. One of these specimens he lately showed me in the Museum of the University of Durham; and he assured me that with it were sent some eggs, of which it was stated to have been the mother."

In Scandinavia this Goose appears to be rare. Mr. Collett writes:—"At the present time it is not proved to a certainty that this species breeds in Norway. The individuals observed by Nordvi in East Finmark, in June 1867, one of which was killed, are supposed by Professor Malmgren, and with good reason, to have been retarded on their annual passage to Spitzbergen or Novaya Zemlya. None of these individuals were preserved. Exclusive of the individual shot near Christiania in the autumn of 1865, two individuals only have been examined of late years; both were killed in the neighbourhood of Trondhjem, in 1871, on the autumn passage."

It appears that this is the only species of Grey Goose found in Spitzbergen; for though *Anser cinereus* was said by several authors to occur there, recent research has proved that in every case the present species was mistaken for the Grey-lag. Professor Newton writes (Ibis, 1865, p. 514), it "has been met with in Wide Bay, lat. 79° 35′ N., and probably it occurs all along the west coast. It is most numerous in Ice Sound, where, as I have said, Ludwig found a hatched-out nest, with two goslings, about midnight between the 16th and 17th July. Dr. Malmgren seems to have met with at least two nests in the upper part of the Sound, from both of which he shot the female bird. One of them, killed on the 4th July near Advent Bay, he describes fully in his last paper; and he gave one of my friends an egg from this nest, which is

now in my possession. The second nest was obtained at Mittelhook, in the same Sound, on the 10th July; and the Doctor kindly presented me with a pair of its eggs. Messrs. Sturge and Evans also gave me one of the eggs they took in 1855. I have thus four very satisfactory examples of this egg, which is so extremely difficult to procure authenticated. They vary very considerably both in size and shape. According to Dr. Malmgren, the species also occurs in Hinlopen Strait and the Stor Fjord." Von Heuglin and other travellers who have visited Novaya Zemlya have met with a Goose there which, judging from Von Heuglin's description, appears to be referable to the present species, and which is common on that island.

In Sweden this Goose is said to be of rare occurrence, but probably through want of care on the part of observers. One which was figured in the Jägareförb. Tidsk. for 1866 is said to have been obtained on the island of Tjörn, off Bohuslän, on the 24th October 1851; and Mr. A. Cnattingius shot two (Sv. Jägareförb. Tidsk. 1868, p. 123) on the 11th October 1866. Professor Malmgren, in an excellent paper on the Geese of Scandinavia, says that the present species has not been observed in, or at least has not been recorded from, Finland; but Von Middendorff states that one was obtained near St. Petersburg. Dr. Palmén (Finl. Fogl. ii. p. 339) includes not only the present species but also another under the name of *Anser rufescens*, which, he says, is the Goose found in Novaya Zemlya, and which he identifies with Naumann's *Anser segetum*. I have unfortunately been unable to examine a sufficiently large series of Geese to decide what this Novaya-Zemlyan species is; but I have little hesitation in uniting it with the Pink-footed Goose, as Von Heuglin gives a very careful description of it. I find but little information respecting its occurrence in Russia, where it may very possibly have been overlooked or mistaken for one of its allies.

Mr. Taczanowsky includes two species of Geese under the names of *Anser arvensis* and *Anser segetum* as occurring in Poland on passage, one of which may probably be the present species. In Germany the present species is found on passage and in winter, but has been greatly confounded with the Bean-Goose. There appears but little doubt that it is the *Anser segetum* of Naumann, and his *Anser arvensis* is the true Bean-Goose. I cannot with certainty say any thing respecting its occurrence in Denmark; but it appears to me from Mr. Collins's description (Skand. Fugl. p. 641), that his *Anser segetum* must be this species; and Mr. Benson writes to me as follows:—"*Anser segetum*, which is often confused with *Anser arvensis*, but which seems to be a more boreal species and a smaller bird, is found on passage in Jutland. It is rarer on the islands; but as it has been so generally confused with the Bean-Goose, it is difficult to give detailed particulars as to its occurrence. A specimen shot in 1876 at Thorshavn, in the Færoes, seems to be very close to the *Anser brachyrhynchus* of Spitzbergen."

According to Professor Schlegel the Pink-footed Goose is obtained now and again in Holland on passage; and the same may be said respecting its presence in Belgium and France. Occasionally individuals are exposed for sale in the market at Dunkirk; and it has been recorded from other localities in the north of France; but it does not, so far as is known, range as far south as the Mediterranean, though it is by no means improbable that it may be found there; for it seems to me that the species included by Dr. Fritsch (J. f. O. 1872, p. 368) under the name of *Anser segetum*, as occurring in the autumn in large numbers in Bohemia, may probably prove to be the Pink-footed Goose.

In Asia the range of this Goose is but ill defined. Dr. Jerdon states (B. of India, ii. p. 780) that it is said to occur in the Punjâb and Western India; Mr. Blyth saw a drawing of one made in the Punjâb; Colonel Irby examined a specimen which was killed in Alumbagh in January 1858; and Mr. A. O. Hume shot two (Stray Feathers, i. p. 258) on the Jumna, in Etawah. It is not improbable that it is to be met with in Northern Asia, though none of the Siberian travellers include it; and it certainly is found in Japan, for Mr. Swinhoe states (Ibis, 1875, p. 456) that he received one from Hakodadi, shot there in October; but he adds that he never met with it in China.

In habits the Pink-footed Goose is said to differ but little from the Grey-lag, which indeed it more nearly resembles in plumage than it does the Bean-Goose. Of its breeding-habits but little, comparatively speaking, is known; and it is only known with certainty to breed in Iceland and Spitzbergen. Professor Malmgren, who obtained its eggs in the latter island, says that it is exceedingly shy and wary. In the early summer it is to be seen in small flocks on moss-covered lowlands near the sea, or on rocky precipices where there is vegetation here and there; but in the breeding-season it is seen in pairs. When moulting, it frequents freshwater swamps; and later on, when collected in flocks, it is to be met with near the coast.

Its nest is placed in prominent situations on high rocks, or platforms on steep cliffs, often close to a river, or in some grass-covered place, and sometimes on high cliffs close to the sea on the inner fjords. The nest is so situated that the bird can have an uninterrupted view from it of the country round, and can readily see if an intruder approaches or danger threatens. Hence it is difficult to shoot this shy bird even at its nest; for the gander is extremely watchful, and directly any one approaches warns his mate by uttering a clear whistling cry. In June the female lays four or five eggs, which are hatched about the 10th to the 15th July; and both parents assist in taking care of the young. I possess a single egg of this Goose, obtained on the Swedish expedition to Spitzbergen, which is pure white, resembling the egg of *Anser cinereus*, but is rather smaller, and the grain of the shell is somewhat smoother.

The specimen figured is the adult bird above described, for which I am indebted to Mr. J. Lumsden, jun., of Arden, Alexandria, N.B.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ad. Kincardine, March 12th (*J. Lumsden, jun.*). *b.* Leadenhall Market, winter.

E Mus. H. Stevenson.

a, ♂. Norfolk, December 30th, 1870. *b, ♂, c, d.* Norfolk, January 17th, 1871. *e, juv.* Norfolk (*H. S.*).



WHITEFRONTED GOOSE.
ANSER ALBIFRONS

ANSER ALBIFRONS.

(WHITE-FRONTED GOOSE.)

Anser septentrionalis sylvestris, Briss. Orn. vi. p. 269 (1760).
Branta albifrons, Scop. Ann. i. Hist.-Nat. p. 69. no. 87 (1769).
Oye rieuse, Buff. Hist. Nat. Ois. ix. p. 81 (1783).
White-fronted Goose, Lath. Syn. iii. pt. 2, p. 463. no. 22 (1785).
Anas albifrons (Scop.), Gmel. Syst. Nat. i. p. 509 (1788).
Anser albifrons (Scop.), Bechst. Gemein. Naturg. Deutschl. 2nd ed. iv. p. 898 (1809).
Anser erythropus, Flem. Brit. Anim. p. 127 (1828, nec Linn.).
Anser medius, Bruch, Isis, 1828, p. 732.
Anser bruchii, C. L. Brehm, Vög. Deutschl. p. 841 (1831).
Anser intermedius, J. F. Naumann, Vög. Deutschl. xi. p. 340 (1842).
Anser pallipes, De Selys, Naumannia, 1855, p. 264.
Anser albifrons roseipes, Schl. Naumannia, 1855, p. 254.

Oie rieuse ou à front blanc, French; *Oca lombardella*, Italian; *Blässengans*, *Lachgans*, German; *Kolgans*, Dutch; *Blisgaas*, Danish; *Nerdlernak*, Greenlandic; *Helsingi*, Icelandic; *Blisgaas*, Norwegian; *Bläsgås*, *Hvitpannad Gås*, Swedish; *Kazarka*, Russian.

Figuræ notabiles.

Werner, Atlas, *Palmipèdes*, pl. 31; Kjærb. Orn. Dan. taf. 45, Suppl. taf. 24; Fritsch, Vög. Eur. taf. 45. figs. 5, 9; Naumann, Vög. Deutschl. taf. 288, 289; Sundevall, Svensk. Fogl. pl. 57. fig. 1; Gould, B. of Eur. pl. 289; id. B. of G. Brit. v. pl. 4; Schlegel, Vog. Nederl. pls. 280, 281, 282.

Ad. fronte et regione ad basin rostri albis nigro-fusco cinctis: capite reliquo et collo cinereo-fuscis, versus abdomen pallidiore: dorso et scapularibus saturatè fuscis, pallidè cinereo-fusco marginatis: dorso postico nigricante: supracaudalibus albis: caudâ saturatè fuscâ albo terminatâ: remigibus nigro-fuscis, scapis albis: tectricibus alarum minoribus fusco-cinereis, extùs cinereis, majoribus cinereis albo apicatis: hypochondriis dorso concoloribus: corpore reliquo subtùs albo, pectore et abdomine conspicuè nigro notatis: rostro aurantiaco-flavo, ungue albido: iride fuscâ: pedibus flavis.

Juv. adulto similis sed coloribus sordidioribus, nec corpore subtùs nigro notato.

Adult Male (Moscow, October). A broad band covering the forehead and the base of the upper mandible, and extending nearly to the eye, pure white; a small spot on the chin and at the base of the lower mandible also white; head and neck dark ashy brown, becoming pale brown towards the breast; the portion margining the white frontal band dark brown; back and scapulars dark brown, the feathers edged with light ashy brown; rump blackish brown; upper tail-coverts white; tail dark brown terminated with white; quills blackish brown with white shafts; wing-coverts ashy brown tipped with white

or brownish white, the outer portion of the coverts tinged with bluish ash; flanks coloured like the back; rest of the underparts white, the breast and abdomen broadly blotched with black; bill and legs yellow with an orange tinge, the nail of the bill white; iris dark brown. Total length about 28·5 inches, culmen 2·25, from the edge of the feathering to the tip 8·85; wing 17·0, tail 6·0, tarsus 2·65.

Adult Female. Resembles the male, but is rather less in size, and has the white on the forehead rather less developed.

Young (Caspian). Resembles the adult, but has the white on the forehead considerably less developed, the underparts are not blotched with black, and the plumage is in general duller.

This Goose, like its ally *Anser erythropus*, passes the summer in the northern portions of the Palæarctic Region, migrating southward during the winter, being met with at that season in North Africa, India, and China. In the Nearctic Region it is replaced by a very closely allied (if indeed distinct) species *Anser gambei*.

In Great Britain the present species is only met with during the cold season of the year, generally in very severe weather, and has been observed on almost all parts of our coasts in suitable localities. Mr. Stevenson, who has paid great attention to the occurrences of waterfowl on the east coast, sends me the following notes, which he purposes publishing in the third volume of his 'Birds of Norfolk,' viz.:—"This species, which is never observed in very large flocks, can scarcely be called a regular winter visitant, being rarely seen in our markets, except in severe weather. As an exception, however, to this rule, in the mild winter of 1851–52, as before stated, a very unusual number of wild geese were shot in different ports of the county; and on the 20th of December the Norwich market exhibited the unusual appearance, amongst other fowl, of two couple and a half of White-fronted, with Bean and Bernacle Geese, from Hickling and other localities; and another White-fronted, from Blakeney, was sent up to Norwich the same day. All these birds were in perfect plumage, the White-fronted Geese, from the markings on the breast, being evidently adult; but their poor condition seemed to indicate 'hard times,' although the weather was then unusually mild with us, and continued so up to the following February. Only in two or three unusually severe winters have I known wild geese so plentiful as in that exceptional season, when I examined upwards of twenty, of various species, for sale in this city.

"From Mr. Dowell's notes for the same year (1851), I find that on the 18th of December he saw a flock of some twenty White-fronted Geese at Holkham; and on the same day he received a fine specimen which had been killed by a gunner at Blakeney. This Goose is considered by Lord Leicester to be rare at Holkham, except in hard weather, when it commonly appears in flocks of from five to ten, and, being less shy, is easier of approach than others. Mr. T. Southwell, in the 'Naturalist' for 1852, recorded several as killed in the neighbourhood of Lynn towards the end of January; two more were shot at Hickling about the same time; and in the same journal for 1854 (p. 88) Mr. Southwell described them as unusually plentiful at Lynn in the previous winter. The few recorded in my own note-books since that time have been all killed during sharp frosts, between December and February, which agrees with Hunt's description of this species, that 'they visit the fenny parts of this county in small flocks in severe

winters.' In West Norfolk, according to Mr. Lubbock, a good many White-fronted Geese are sometimes observed with the Bean, or, as now distinguished, more probably with the Pink-footed. Blakeney and Holkham have been already mentioned as localities where it is occasionally remarked; and the brackish waters of Salthouse would seem to have attractions, as an adult bird in my own collection was killed there on the 22nd of December 1866, and Mr. Dowell had one sent him from the same place so early as the month of October 1850. A single bird was killed at Surlingham, during a severe frost, in January 1864, being over twenty miles from the coast; and a specimen in Mr. Upcher's collection, at Sherringham, was, singularly enough, shot out of a fence by the sea, where it was discovered by a Scotch terrier. The Messrs. Paget describe them as 'occasionally seen on Breydon;' and Hickling Broad appears to be a favourite resort in sharp weather.

"It is remarkable that during the severe winter of 1870–71 this species, as Lord Leicester informs me, was not seen at all at Holkham; and a single adult bird, which I purchased in the Norwich market on the 18th of February, was the only example that came under my notice during that inclement season."

Mr. Cordeaux says (B. of Humber Distr. p. 150) that in the Humber District it is "an occasional winter visitant, but by no means common, although tolerably numerous in some seasons; flocks were seen, and several birds shot from them, in the neighbourhood of the Humber during the severe winter of 1864–65." It is also found during the autumn and winter on the coasts of Northumberland and Durham, and also in Scotland in various localities. Mr. Robert Gray writes (B. of W. of Scotl. p. 346) as follows:—"After much patient research, I have come to the conclusion that this species is the most local of all the British wild geese. It seems to be plentiful in Islay, from which island I have seen fine specimens of the bird sent to the Glasgow bird-stuffers; but in nearly all the other islands, including the whole of the outer group, it can only be ranked as a straggler. Mr. Graham has met with it on one or two occasions in Iona and Mull, the specimens which he obtained having been attracted by tame geese in the poultry-yard, with which they remained for some time. Mr. John Macdonald, Newton, has also informed me that it is rare in North Uist; one was seen on his farm in 1856. This last specimen attracted Mr. Macdonald's attention by its peculiar cry; it remained for several days beside his semidomesticated Grey-lags, and seemed to prefer their company to that of the domestic geese. Similar records have been sent me from other islands, and also from some districts on the mainland, all of which tend to show that when single individuals stray from the main body they really take refuge, after a time, among domestic poultry. In the West of Scotland its head quarters are in the island of Islay; and I am indebted to Mr. Elwes for the following interesting notes, which are the result of his own observations, on the species:—'This is the common Grey Goose of Islay. It arrives usually in the first week of October, and stays till the second week in April. On their first arrival they keep a good deal about the lochs, and feed in the marshy places around them; but later in the year they go regularly to the stubble- and grass-fields to feed, showing a great partiality to particular fields. They go in flocks, from three to four to one hundred or more, and are not very difficult of approach to a good stalker, when on the fields, as there is nearly always a wall or ditch within shot of them. The old birds sometimes have the breast entirely black; but usually the black is

in irregular bars. Neither the White-fronted nor any Geese, except the Brent, settle on the water often, unless driven to do so, as they seem to prefer land.' From this island, as has been remarked, stragglers appear to leave the main body occasionally, and make their appearance here and there as solitary visitors to farm-steadings. The last deserter I had the opportunity of examining (a very beautiful male bird) was shot on the Clyde, near Dumbarton, on the 15th January 1868. In the eastern counties of Scotland the principal flock of White-fronted Geese seems to attach itself to the county of Elgin or Moray, where the species seems to have attracted the notice of the late Mr. St. John many years ago. Southwards it is found wandering in exactly the same way as has been observed in the west. I have seen stray specimens killed in Forfarshire and Aberdeen; and the Earl of Haddington informs me that a very fine specimen, in adult plumage, now in his collection, was shot in a meadow at the mouth of the Tyne, in East Lothian, on the 11th February 1867."

As in England, the present species is found in Ireland during the winter season, and, Thompson states, is a tolerably regular visitant.

It is not improbable that the White-fronted Goose of Greenland may be the large-billed form *Anser gambeli*; but I have been unable to convince myself of this by an examination of specimens. Professor Newton says that it occurs not unfrequently between 66° and 68° N. lat., and was observed by the German expedition on the east coast; and Captain Feilden writes to me as follows:—"My first landing in Greenland took place at Disco, north of the line indicated by Professor Newton. This Goose is not known about the settlement of Godhavn; but I dare say that its absence is due to the island of Disco being too far seaward to suit the habits of this bird. On the south side of Disco Bay, at the settlement of Egedesminde, the Governor kindly gave me a sitting of eggs taken during the summer of 1876 from one of the skerries or little islands so numerous in that part of Disco Bay. Unfortunately I could not lay hands on a skin or even a head of this Goose. The Governor assured me that it is by no means common in the district of Egedesminde. Professor Newton writes (Notes Orn. Icel. p. 16):—"Faber only observed this species in the south of Iceland. He says it breeds there, a statement doubted by Dr. Krüper. Faber never states, as asserted by Herr Preyer, that he did not obtain it. On the 11th of May, 1858, I saw several freshly-killed examples at Reykjavik, one of which I purchased, and had it preserved as a specimen. All the Icelanders who saw it recognized it as 'Helsingi.'" Mr. Müller informed Captain Feilden that one was seen amongst other Wild Geese on the island of Mygoenæs in April 1867.

Earlier writers asserted that the present species breeds in Scandinavia; but this statement appears to be based on a confusion between it and *Anser erythropus*, which not unfrequently nests in Northern Scandinavia; whereas *Anser albifrons* is not with certainty known to occur there during the breeding-season, and is only found during the seasons of passage. Mr. Collett informs me, however, that Mr. Nordvi has observed it on the Varanger fiord as late as June, and that it occurs along the southern coasts of Norway in flocks or singly during passage and in winter, and is not rare. Professor A. J. Malmgren has written (Not. Sällsk. Faun. & Flor. Fenn. x. 1869) an excellent article on the distribution of the Geese in Scandinavia, in which he carefully sifts the information on record respecting the present species and *Anser erythropus*. He states that though most of the records of White-fronted Geese in Sweden refer to *Anser*

erythropus, yet the present species certainly occurs on passage in Central and Southern Sweden, and there are specimens in the Stockholm Museum obtained on Mörkö in October. It doubtless occurs on the coast of Finland; but Professor Malmgren states that, so far as he is aware, there is no instance of a specimen having been obtained there. Mr. Sabanäeff informs me that the present species is common on passage in the interior of Russia, especially in the districts bordering the Volga, and he found it very common in the lakes on the south-eastern slope of the Ural. It migrates from the mouth of the Ob, through the districts in the east of the Perm Government, and along the Kama river. I have never received it from Archangel in any of the collections sent to me from there; and it would seem to breed further east. In Poland, Mr. Taczanowski states, it is rare on passage; and Borggreve says that it is seen almost every season on passage on the coasts of North Germany, but is seldom to be met with in the interior. Mr. Collin writes that in March and April, and again in September and October, it is common off the coasts of Denmark, especially on the west coast of Jutland and the Duchies, on Möen, Falster, &c. It is found in Holland on passage between December and February, and is said to occur abundantly in Belgium, at the mouth of the Escaut. Messrs. Degland and Gerbe state that it occurs in large flocks on the coasts of France in December, January, and February, and is the Goose most frequently met with in the vicinity of Lille. It also appears in large flocks in Lorraine, Anjou, and the Basses Pyrénées. It is included by Professor Barboza du Bocage in his list of the birds of Portugal with a query; and Colonel Irby stated in his 'Ornithology of the Straits of Gibraltar' that he never met with it on either side of the Straits of Gibraltar; but he has since informed me that a specimen was shot by Lieutenant Kelham, 74th Highlanders, on the 8th January, at Laguna de la Janda, near Gibraltar, and that he was informed by Lord Lilford that he has recognized the cry of this Goose near Seville. In Italy, Salvadori states, it is of rare occurrence in the winter, and usually met with in the northern districts. It has been recorded from Pavia, Tuscany, and near Rome; and Professor Costa mentions that one was obtained near Naples in January or February 1870. It does not seem to occur on the islands in the Mediterranean. According to Dr. A. Fritsch (J. f. O. 1872, p. 367) the White-fronted Goose appears as a straggler in company with the Bean-Goose on the ponds near Frauenberg, in Bohemia, where it is known under the name of "Lachgans;" and there is a fine series of specimens in the museum of that town. Elsewhere in Bohemia he has not heard of its occurrence; and altogether it appears to be but seldom met with in South Germany. Messrs. Danford and Harvie-Brown state (Ibis, 1875, p. 426) that, according to Herr Buda Ádám, it has occurred in Transylvania, but that it is very rare there; and Messrs. Elwes and Buckley say that it is occasionally found in Turkey in winter. According to Dr. Krüper it frequently visits Greece during severe winters; and it is also a winter visitant to Southern Russia and Asia Minor; but Canon Tristram does not appear to have met with it in Palestine.

In North-east Africa it is found commonly during the cold season. Captain Shelley writes (B. of Egypt, p. 280) as follows:—"This is the most abundant Goose in Egypt, where it may usually be met with in flocks, but does not remain in the country later than March. When on the wing they fly in a wedge-shaped flock, and frequently utter a loud, harsh cry, which may be heard at a considerable distance. They are generally on the move just before sunrise and sunset; and as they are very regular, taking the same line of flight and feeding at the same spot each

day, they may be most readily obtained by lying in wait for them. If once fired at, the flock generally leaves the neighbourhood altogether." Von Heuglin says that it visits Egypt regularly in the winter season, but he is unable to state the exact time at which it arrives. He saw numerous flocks in February and up to the middle of March passing northwards through Assouan. He surmises that it scarcely crosses the equator. Dr. Adams speaks of it (Ibis, 1864, p. 33) as being "the most common Goose on the Nile, and usually seen in vast flocks at daybreak, returning to the shallows from feeding all night in the wheat-fields. This species decreases southwards, and is rarely seen beyond the marsh at Edfoo. The young birds have a black line around the base of the bill, and no bars on the breast and belly. The White-fronted and also, seemingly, the Grey Goose were domesticated by the old Egyptians. There is a characteristic delineation in the British Museum, where the steward, in the presence of the owner, is counting Geese and Ducks, whilst their feeders, one after the other, are making their obeisance to their master. The above species appears likewise among the votive offerings on the temples. I especially noted, in the little temple of Amada, in Nubia, a scene of this description. The colouring was still clear, and the markings distinct, in consequence of having been sealed up for many centuries by mud, with which the early Christians bedaubed the walls of the temples, in order to efface all records of the idol-worship of their predecessors, little aware at the same time what delightful pictures they were preserving for future generations."

To the eastward this Goose occurs right across the continent of Asia. It is met with not uncommonly on the Caspian, but was not observed by Mr. Blanford in Persia; and in India, Dr. Jerdon writes (B. of India, ii. p. 781), it is only known as a winter visitant to the lakes and rivers of the Punjab. In Siberia, however, it is common in the northern districts. Von Middendorff says that it is the commonest species of Goose found breeding on the Taimyr. On the 10th July he found in 74° N. lat. a nest containing two eggs in a depression in the top of a cone-shaped tussock, the eggs being well bedded in down. About this time the birds were commencing to moult, and on the 15th July (O. S.) he observed several flocks which could not fly at all; but, on the other hand, many did not moult till the 27th July. On the 3rd August they could fly again, though he found one breeding on a rocky islet in the Taimyr lake on the 2nd August (O. S.). On the 6th September this Goose was seen in flocks on the south coast of the Sea of Ochotsk. In the spring, he says, the first stragglers appeared on the Boganida in 70° N. lat. on the 14th of April (O. S.), a few days earlier than the Bean-Geese. The Samojedes told him that on the 12th May they saw near the river Nówaja a Goose flying from the north southwards; and on the 19th May during cloudy still weather two Geese passed overhead in $72\frac{1}{2}^{\circ}$ N. lat. flying south. On the 21st May first one Goose, and several hours later two more were seen flying north, the wind blowing moderately from the south-east. As early as the 27th May, north of the 73° N. lat., several flocks were seen flying restlessly about; and on the 3rd June the main body arrived on the Taimyr. Dr. Radde purchased one in the market at Irkutsk, but did not see any elsewhere during his sojourn in East Siberia; nor does Von Schrenck include it in his work. Mr. Taczanowski states, however (J. f. Orn. 1873, p. 108), that it is rare in Kultuk, but was not unfrequently seen at Irkutsk by Mr. Zebrowski. It is difficult to give the times of migration, as the flocks of Geese which pass Kultuk seldom settle down to rest there on their journey.

It is found in China and Japan; for Mr. Swinhoe states that it is found in the Shanghai market in winter, and (Ibis, 1875, p. 456) that it has been obtained at Hakodadi.

It appears to me very doubtful if the American form of White-fronted Goose (*Anser gambeli*) should stand as a distinct species; and, unfortunately, I have not been able to collect together a sufficiently large series of specimens to decide this question. The only character on which a specific distinction can be based is the size of the bill, that of *Anser gambeli* being, it is alleged, always much larger than that of *Anser albifrons*. I find, however, that, in the specimens of *Anser albifrons* which I have examined, the bill varies not a little in size, and in one or two it is but little smaller than that of a typical *Anser gambeli*. Dr. Elliott Coues, who has had a better opportunity of comparing specimens than myself, says (B. of N. W. p. 547) that "the ordinary variation in either case is as great as the difference supposed to distinguish the two species; and, moreover, the bills of some American specimens are no longer than those of some European ones. A slight *average* discrepancy, therefore, is probably all that can fairly be said to exist." This large-billed form of our White-fronted Goose inhabits the whole of North America, breeding in the far northern districts, migrating southward in the winter, at which season it is found at least as far south as Texas, where I have shot it. It is also said to occur in Cuba.

In habits the White-fronted Goose appears to differ but little from its allies the Bean-Goose and Grey Lag; but it is said to prefer low, damp districts to the uplands, and seems to be more frequently seen in localities where there are aquatic grasses than in the corn- and stubble-fields. It is often seen on our coasts and rivers during severe weather, and in marshy districts and grass-fields. Mr. St. John says that it appears in the lower parts of Morayshire earlier than the other species, and is never seen in large flocks, but in companies of from eight to ten individuals, and appears to be wholly graminivorous. When undisturbed it usually passes the night in any grass-field where it may have been feeding in the afternoon.

This Goose feeds almost exclusively on vegetable matter. Mr. Macgillivray says that a specimen sent to him from Alnwick, in Northumberland, had its stomach gorged with the tender shoots and leaves of the common clover, upon which it was feeding on the breaking-up of a severe snow-storm. It is said by several authors to feed also to some slight extent on insects; and Naumann states that he has more than once found remains of a large beetle intermixed with the vegetable substances in the stomachs of specimens killed and examined.

This Goose breeds, like its allies, near freshwater or salt pools not immediately on the coast, and makes a tolerably large nest on the ground, in which it deposits four or six eggs, which are well bedded in down. I possess several eggs taken in Greenland which are yellowish white in colour, and measure from $3\frac{2}{40}$ by $1\frac{17}{40}$ inch to $3\frac{5}{40}$ by $2\frac{5}{40}$ inches.

The specimens figured are the adult and young birds above described, and are in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Moscow, October (*Dr. Stader*). *b*, *juv.* Caspian (*Dr. Stader*). *c*, ♂ *ad.* El Snober, Syria (*Schlüter*).

ANSER ERYTHROPUS.

(LESSER WHITE-FRONTED GOOSE.)

Anas erythropus, Linn. Syst. Nat. i. p. 197 (1766).
Anser finmarchicus, Gunner, in Leemii de Lappon. Comm. notis, p. 264 (1767).
Anser temminckii, Boie, Isis, 1822, p. 882.
Anser cineraceus, C. L. Brehm, Lehrb. Naturg. eur. Vög. ii. p. 772 (1824).
Anser minutus, J. F. Naumann, Vög. Deutschl. xi. p. 364 (1842).
Anser erythropus (Linn.), Newton, P. Z. S. 1860, p. 341.

Zwerggans, *Schwalbengans*, German; *Dwerggans*, Dutch; *Dværgaas*, Danish; *Finmarksgaas*, *Dverg-gaas*, Norwegian; *Dverggås*, *Fjellgås*, Swedish; *Kiljuhanhi*, Finnish; *Piskun*, Russian.

Figuræ notabiles.

Kjærb. Orn. Dan. Suppl. taf. 24; Fritsch, Vög. Eur. taf. 45. figs. 3, 7; Naumann, Vög. Deutschl. taf. 290; Sundevall, Svensk. Fogl. pl. 57. fig. 3; Schlegel, Vog. Nederl. pl. 283.

Anseri albifronti similis sed conspicuè minor, fronte albâ magis extensâ: rostro albido carneo tincto: ungue corneo-albo, pedibus aurantiacis: iride fuscâ.

Adult Male (Lower Volga, October). In general plumage closely resembling *Anser albifrons*, but darker and much smaller in size, the bill being also proportionally smaller; underparts rather more profusely marked with black; white band on the forehead broader, extending nearly to the centre of the crown; bill dull white with a flesh tinge; nail pale horn-colour; iris brown; legs and edge of eyelids orange-yellow; lamellæ of the bill less perceptible than in *Anser albifrons*. Total length about 20 inches, culmen 1·5, wing 15·5, tail 5·0, tarsus 2·5.

Adult Female (Japan). Resembles the male, but is rather duller and more rufescent in tinge of colour.

Obs. The female is rather smaller than the male; but the males vary a good deal in size. The examples from Siberia, both females, are very small, but not less than the bird obtained in North Africa by Mr. Gurney, which measures—wing 12·4, tarsus 2·2, culmen 1·3.

This miniature White-fronted Goose is an inhabitant of Northern and Eastern Europe, but rarely straggling into the western countries. In Asia it ranges right across to Japan; and it has been on more than one occasion obtained in North-east Africa in the winter season.

It has not been observed in Great Britain, but occurs in Scandinavia, where, however, it is only a rare visitant on passage, except in the northern districts. Mr. Collett informs me that one was caught alive on the islands off Christiania in 1852, and another was shot out of a flock there in 1865. Several pairs are said to breed on the Lofoten Isles; and on the Varanger fiord,

according to Sommerfelt, it is chiefly met with on the Galbokjok, a branch of the Tana river. It breeds both on the Varanger fiord and in several parts of Lapland, as, for instance, in Utsjoki and Enare parishes, at Enontekis, near Kilpisjärvi, and on the fells near Kautokeino.

In Sweden it is said to appear now and then on the shores of the Baltic. Nilsson records the occurrence of one on the Motala river in September 1849. Meves says that it has been shot on Öland; and, according to Dr. Sundström, there is a Goose in the Örebro Museum said to be the present species. Wheelwright, who met with it at Quickjock, remarks that it is the only species of Goose he saw there, and he could never hear that any goose but this and the Bean-Goose bred there. Although he never took the nest himself, he is certain that it nests on the fells; for any night he was camping out he could hear its cry (which much resembles its Lap name) *kasak*, *kasak*, apparently uttered from the highest snow-capped fells, as he never saw them on the fell-meadows. According to Dr. Palmén this little Goose occurs regularly in Northern Finland, on the Torneå river and at Uleåborg, on passage; Sadelin records it from Wasa; and Von Wright believes that it passes Kuopio on the spring migration. One was shot in Uskela in May 1850; and it has been recorded, though in many instances confused with *Anser albifrons*, from Helsingfors, Esbö, and Porkkala; and Tengström states that large flocks pass annually over a sheet of water at Wuoksen in May and late in September or early in October. In Central Russia the Lesser White-fronted Goose is said to be somewhat rare; but it has been recorded from the Vologda Government, and Bogdanoff states that it occurs on passage near Astrachan. In the Ural, however, it is, Mr. Sabanäeff writes, very numerous, and tens of thousands pass through the Shadrinsk district during migration. As a rule they migrate along the western slope of the mountains. It occurs in Poland, where, however, it is much rarer than *Anser albifrons*; and it appears to be still rarer in Germany. Naumann says that many years ago one was shot on the Schwanensee, near Erfurth; one was obtained by Nitzsch near Zerbst; and Dr. Schalow states (J. f. O. 1877, p. 335) that a specimen was procured on a pond near Hennersdorf, half a German mile from Görlitz. It has occurred more than once in Denmark, and may have been obtained oftener than it has been recorded, and mistaken for *Anser albifrons*. Mr. Scheel shot one on the 15th October 1825 at Ulfshale. Mr. Collin purchased one at a game-dealer's, in Copenhagen, on the 10th September 1850; and Mr. Benzon informs me that several were shot out of a flock in Randers Fjord in March 1878, all of which were eaten; but he secured the head of one, and thus identified the species. Professor Schlegel states that it has been met with rarely on passage in Holland. Degland and Gerbe say that a young example was killed at Douai on the 15th January 1849; but it is of extremely rare occurrence in France, and has not been obtained in Portugal; a single example, however, now in the possession of Lord Lilford, was obtained near Spain, by Ruiz.

I do not find any record of its occurrence in Italy, Sardinia, or Sicily; but it is found in Greece as a rare winter visitant. Dr. Krüper says that in the winter of 1874–75 he purchased one in the Athens market, and some years previously saw several. It occurs now and again in Southern Germany; and has, according to Naumann, been obtained in Austria and Hungary; Dr. Fritsch states (J. f. O. 1872, p. 367) that the examples figured in his 'Vögel Europa's' were obtained near Fanenberg, Bohemia, by Feldegg about thirty years ago; and Mr. Hromádko, of Pardubic, possesses a fine old female, which was shot between Zdanic and Bohdanec on the

2nd November 1863. I do not find it recorded from the Lower Danube, where it doubtless occurs on passage; but the Marquis Antinori remarks (J. f. O. 1858, p. 484) that Mr. Gonzenbach and he only saw two examples amongst the large numbers brought to the Smyrna market during nine years. Canon Tristram did not meet with the Lesser White-fronted Goose in Palestine; but it certainly occurs during the winter in North-east Africa. Von Heuglin says (Orn. N.O.-Afr. p. 1285) that this Goose doubtless visits Northern Egypt; but he does not appear to have had any reliable data respecting its occurrence. Mr. J. H. Gurney, jun., however, procured one which was shot at Damietta in January 1875; and this capture, cited by him in his 'Rambles of a Naturalist,' appears to be the first undoubted instance on record of its occurrence in that country. It has, however, most certainly been obtained there previously; for I have examined a specimen in the possession of Mr. G. Cavendish Taylor, which was shot by him in Upper Egypt on the 1st January 1854, out of a flock sitting on a sandbank in the river.

In Asia the Lesser White-fronted Goose ranges across the continent eastward to Japan, and southward into India. Eichwald and Pallas record its occurrence on the Caspian; but Mr. Blanford did not meet with it in Persia. In India this little Goose is said to be very rare. Colonel Irby shot two and saw a third near Seetapore, in Oudh, in October 1859; and Mr. A. O. Hume writes (Stray Feathers, i. p. 259):—"For the first time in my life I saw and shot three specimens in the river Jhelum, below Shahpoor; and I again saw a pair on the Indus, between Sehwan and Kotree. Nowhere else did I observe them during the trip, though their small size and very brown appearance render them easily recognizable at long distances with the help of binoculars. In neither case were they associated with other waterfowl. In one case the three, in the other the pair, were seated at the water's edge on the river's bank with no other birds of any kind near them." Dr. Finsch saw it in large flocks near Obdersk, in Western Siberia; and Mr. Seebohm obtained two on the Jennesei. Von Middendorff remarks that it is much commoner on the Taimyr and Boganida than *Anser albifrons*, and breeds there; for he found a downy young bird on the 13th June. Dr. Radde observed the first on the Tarei-nor on the 25th April; but on the plains in the Bureja Mountains he shot one on the 9th April. In the spring it is rare on the Tarei-nor; but in the autumn, in September, it frequently passes in vast flocks. The two examples shot by Mr. Seebohm are very small as compared with others I have seen, the bill being weak, and the wing fully $1\frac{1}{2}$ inch shorter than in the specimen from Japan. Mr. Taczanowski states (J. f. O. 1873, p. 108), it is "rare in Kultuk, in Siberia; but Mr. Zebrowski observed it not unfrequently near Irkutsk. He adds that he cannot fix the time of migration, as the flocks of Geese seldom settle near Kultuk. Dr. Dybowski sent home specimens from both Kultuk and Irkutsk." It is said to occur regularly in Japan and in China, where large flocks are seen in the eastern provinces, chiefly in Kiangsi, in February and March; and at the same season it may be found exposed for sale in the market at Shanghai.

In habits the present species is said to assimilate closely to the White-fronted Goose. It breeds, like many of the Geese, in the extreme north of the European and Asiatic continents. Dr. Sundström informs me that, according to Lieutenant Widmark, this Goose breeds in Lapland in places near where there is ice all the season, and nests in considerable numbers; but I have no detailed information respecting its nesting-habits. Lieutenant Widmark says that it moults about the first of July, and he saw a flock in full moult early in August. When in moult they

collect in vast flocks, and frequent localities where the ice always remains; and though unable to fly, they are swift enough on the foot to escape capture.

I possess eggs obtained at Kautokeino which resemble those of *Anser albifrons*, but are much smaller, and rather smoother in texture of shell. In size they average about $2\frac{36}{40}$ by $1\frac{38}{40}$ inch. Mr. Collett informs me that the eggs are usually deposited in June, the normal number being five or six.

As this Goose differs so little from *Anser albifrons*, except in size, I have not thought it advisable to figure it.

The specimens described are in my own collection and in that of Mr. H. Seebohm.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Lower Volga, October 1876 (*Schlüter*).

E Mus. H. Seebohm.

a, *b*, ♀. Yennesey, East Siberia, June 2nd and 5th, 1877 (*H. S.*). *c*, ♀. Japan (*Blakiston*).

E Mus. J. H. Gurney, jun.

a. Damietta, Egypt, January 1875 (*E. Filliponi*).

E Mus. G. Cavendish Taylor.

a. Upper Egypt, January 1st, 1854 (*G. C. T.*).

Genus BERNICLA.

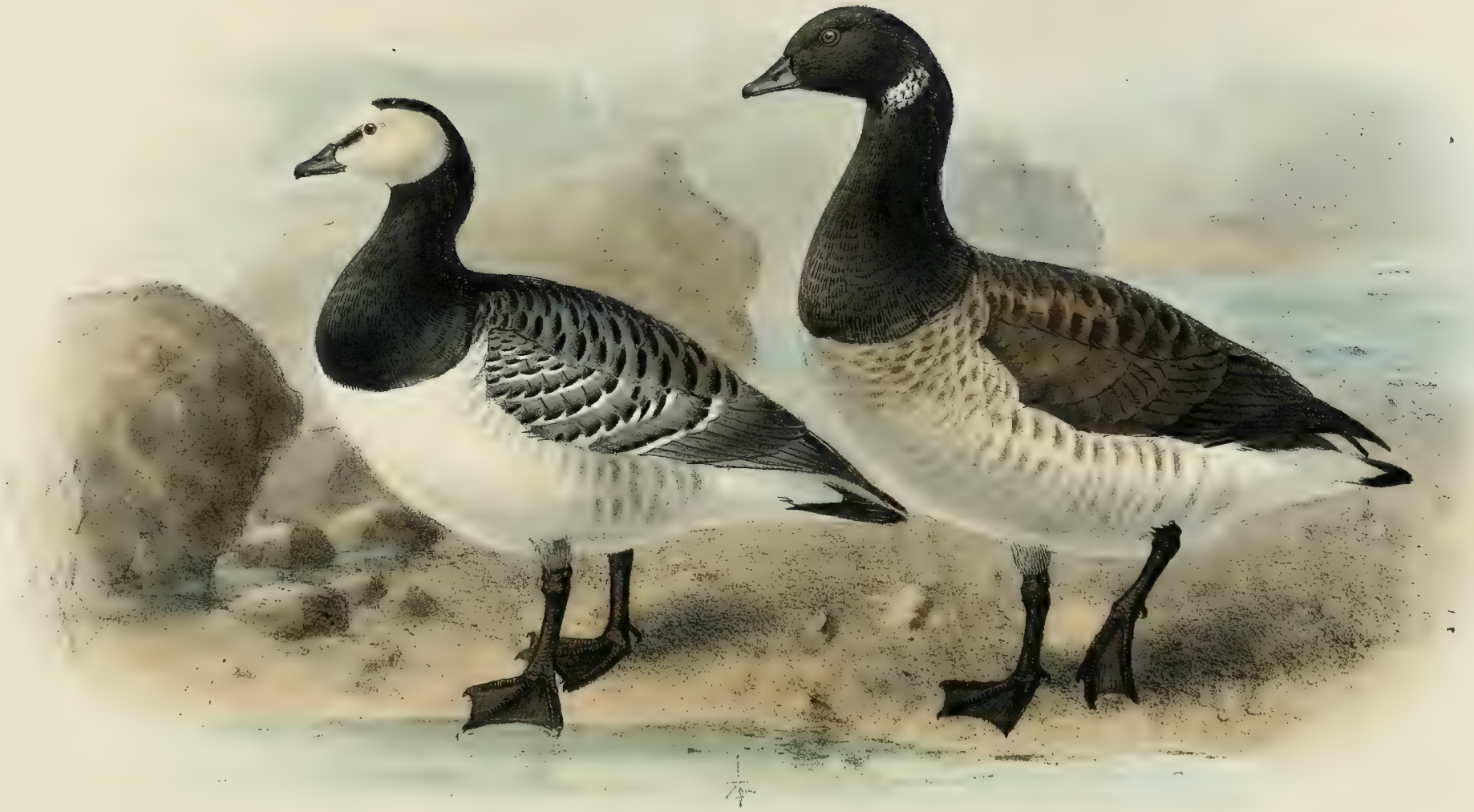
Anser apud Brisson, Orn. vi. p. 304 (1760).
Anas apud Linnæus, Syst. Nat. i. p. 198 (1766).
Branta apud Scopoli, Ann. I. Hist. Nat. p. 67 (1769).
Bernicla, Boie, Isis, 1822, p. 563.
Rufibrenta apud Bonaparte, Compt. Rend. xliii. p. 648 (1856).

The Bernacle Geese differ chiefly from those included in the genus *Anser* by their short, narrow bills, and in having the feathers on the neck as in the Ducks, and not disposed so as to form ridges and grooves. They inhabit the Palæarctic and Nearctic Regions, ranging in winter into the northern part of the Ethiopian Region and also the southern part of the Neotropical Region. Three species inhabit the Western Palæarctic Region.

In general habits these birds do not differ from the true Geese; and like them they feed on vegetable substances. They are very shy and wary, frequenting open localities; and, like their allies, they feed a good deal at night, especially when the nights are moonlight. They breed in high latitudes, and place their nests, which are constructed of grasses and moss, lined with down, on the ground, and deposit several uniform creamy-white eggs.

Bernicla brenta, the type of the genus, has the bill much shorter than the head, subconical, higher than broad at the base, narrowing to the end, unguis broadly ovate; edges of the bill straight, the outer ends of the lamellæ scarcely visible; nostrils oval, placed in the anterior portion of the nasal depression, near the centre of the bill; wings large, the second quill longest; tail short, rounded; legs short, stout, placed well forward; tibia slightly bare, the tarsus reticulate; hind toe small, anterior toes long, united by a membrane; claws small, obtuse, that on the middle toe broadly rounded; plumage full, close, the feathers on the neck narrow, blended.

The Canada Goose, *Bernicla canadensis*, a species much larger than either the Brent or Bernacle Geese, has been included in the British list; but, inasmuch as it is a bird that is frequently kept in a semidomesticated state, it seems probable that the specimens recorded were escaped birds, and I have therefore deemed it best to exclude it.



BERNACLE GOOSE.
BERNICLA LEUCOPSIS.

BRENT GOOSE.
BERNICLA BRENTA.

BERNICLA BRENTA.

(BRENT GOOSE.)

Anser brenta, Briss. Orn. vi. p. 304 (1760).
Die Baumgans, Glaucius, Morillon, Frisch, Vorstell. Vög. Deutschl. taf. 156.
Anas bernicla, Linn. Syst. Nat. i. p. 198 (1766).
Branta bernicla (L.), Scop. Ann. i. Hist. Nat. p. 67. no. 84 (1769).
Le Cravant, Buff. Hist. Nat. Ois. ix. p. 87 (1783).
Anas monachus, Beseke, Vög. Kurl. p. 45, pl. 5 (1792, nec Scop.).
Anser torquatus, Bechst. Gemeinn. Naturg. Deutschl. 2nd ed. iii. p. 911 (1809, ex Frisch), nec Gm.
Anser brenta, Pall. Zoogr. Rosso-As. ii. p. 229 (1811, ex Briss.).
Bernicla torquata (Bechst.), Boie, Isis, 1822, p. 563.
Bernicla brenta, Steph. in Shaw's Gen. Zool. xii. pt. 2, p. 46 (1824).
Bernicla glaucogaster, C. L. Brehm, Vög. Deutschl. p. 849 (1831).
Bernicla micropus, C. L. Brehm, ut suprà (1831).
Bernicla platyuros, C. L. Brehm, op. cit. p. 850 (1831).
Bernicla collaris, C. L. Brehm, op. cit. p. 851 (1831).
Bernicla melanopsis, Macgill. Man. Brit. Orn. ii. p. 151 (1842).
Bernicla pallida, C. L. Brehm, Vogelfang, p. 368 (1855).

Brent Goose, Brant, English; *Guirenan*, Gaelic; *Bernache cravant*, French; *Oca colombaccio*, Italian; *Ringel-Gans, Brand-Gans*, German; *Rotgans*, Dutch; *Knortegaas*, Danish; *Helsingegaas*, Færoese; *Nerdlek*, Greenlandic; *Margás*, Icelandic; *Ringgaas, Gaul*, Norwegian; *Prutgås*, Swedish; *Kaulushanhi, Sepelhanhi*, Finnish.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 342; Werner, Atlas, *Palmipèdes*, pl. 33; Kjærb. Orn. Dan. taf. 45; Frisch, Vög. Deutschl. taf. 156; Fritsch, Vög. Eur. taf. 45. fig. 2; Naumann, Vög. Deutschl. taf. 292; Sundevall, Svensk. Fogl. pl. 57. fig. 5; Gould, B. of Eur. pl. 351; id. B. of G. Brit. v. pl. 7; Schlegel, Vog. Nederl. pl. 286; Audub. B. of Am. pl. 379; Wilson, Am. Orn. pl. 72. fig. 1.

Ad. capite et collo toto ad sternum nigris: colli lateribus maculis transversalibus albis utrinque notatis: dorso, tectricibus alarum et scapularibus fuscis, pallidiore marginatis: uropygio saturatè fusco: remigibus et rectricibus nigro-fuscis, uropygii lateribus et supracaudalibus albis: corpore subtùs griseo-albo, abdomine imo et subcaudalibus purè albis, corpore reliquo subtùs indistinctè pallidè fusco-cinereo fasciato: hypochondriis cinereo-fuscis, plumis albo marginatis: subalaribus saturatè fuscis griseo tinctis: rostro et pedibus nigris: iride fuscâ.

Juv. capite et collo sordidioribus, maculis in colli lateribus minoribus: corpore subtùs saturatè fusco, abdomine imo et subcaudalibus albis: hypochondriis albido fasciatis.

Adult Male (Point Lepreaux, New Brunswick, 7th April). Entire head, neck, upper breast, and fore part of the back deep glossy black, except the chin and sides of the head, which are duller black; sides of the neck clearly marked with pure white; back, scapulars, and wing-coverts dull dark brown, the feathers having lighter brown edges; rump blackish brown; sides of the rump and upper tail-coverts white; tail and quills blackish brown; lower breast and underparts generally white, the lower abdomen and under tail-coverts pure white, the rest of the underparts indistinctly barred with pale ashy brown, the flanks ashy brown, the feathers margined with white; under wing-coverts dark brown with a greyish tinge; bill and feet black; iris dark brown. Total length about 23·5 inches, culmen 1·5, wing 12·6, tail 4·2, tarsus 2·1.

Adult Female. Resembles the male.

Young in autumn plumage (Skara, Sweden). Differs from the adult in having the black on the head and neck duller; the white markings on the sides of the neck are less clearly defined; the upper parts are rather duller in colour; the black on the breast is duller and gradually merges into dark brown, which latter colour pervades the underparts down to the lower abdomen, which, with the under tail-coverts, is white; flanks barred with dull white.

Like its ally, the Barnacle Goose, the present species inhabits high latitudes during the summer season; but it has a wider range than that species, being met with throughout the northern portions of Europe, Asia, and North-east America, migrating southward during the cold season.

It occurs on the coasts of Great Britain in larger or smaller flocks in the winter season, especially during severe weather, and is, Yarrell says, considered to be one of the most numerous of the Geese that visit our shores, but is most frequently met with on the south and east coasts, though it occurs in every part where suitable localities are to be found. Mr. Stevenson informs me that in Norfolk "this small species is both a regular and abundant winter visitant to our coast in autumn, its numbers increasing with the severity of the weather, and in very hard winters is met with in immense flocks. About Yarmouth, as described by the Messrs. Paget, it is not uncommon; but its chief resorts are the flat sandy shores of the northern and western parts of the country; and so essentially is this a marine species, that it is rarely met with on the broads or other inland waters." Mr. Cordeaux states that in severe winters and long-continued frosts it occurs in immense flocks off the Yorkshire and Lincolnshire coasts, as also within the estuary of the Humber; Mr. Hancock states that it is a common autumn and winter visitant to the coasts of Northumberland and Durham; and Mr. Robert Gray writes (B. of W. of Scotl. p. 351) as follows:—"Throughout Western Scotland the Brent Goose is much less common than the Bernacle Goose—a circumstance arising probably from a comparative want of suitable feeding-ground. It is therefore more local in its habits with us than on the eastern shores, where such places as the Firths of Beauly and Cromarty prove so great an attraction. Though it occurs in the Outer Hebrides, one can never calculate with certainty on seeing it, as in the case of the Bernacle. A few are known to frequent the west side of Lee and South Uist. Its visits are, of course, strictly confined to the winter months. In the centre of the inner islands the best-known haunt of the Brent is in Islay. A large flock is annually observed at Loch Indaal, a locality much

better suited to the habits of the bird than most highland sea-lochs, on account of the abundance of grass which grows on the muddy sands, and which forms the principal food of the species. Mr. Elwes, who has observed this flock, informs me that the Brent Geese remain at Loch Indaal during the entire winter, and that at low-water they sit a good deal on the sands, and seem to feed principally by day, being very little disturbed, and sometimes tame enough to let a boat approach within seventy or eighty yards before rising. Their cry is a deep metallic note, something like *craunk*, *craunk*, repeated several times; but they do not utter it much, except when they have been disturbed by boats or otherwise. Brent Geese afford excellent eating, their favourite food being a sweet grass which grows on the flats in shallow water.

"On the east coast of Scotland the Brent Goose is particularly abundant in certain firths or estuaries, and is found throughout the winter months in tolerably large flocks from Berwick to the Orkneys. Selby speaks of being informed that twenty-two were killed at one shot near Holy Island; and a writer in the 'Edinburgh Journal of Natural History' for May 1837, probably Mr. Macgillivray, the editor, states that he had seen a flock of ten thousand Brent Geese in the Cromarty Firth, between Invergordon and Cromarty ferry. He did not, however, say what means he took to count them."

It occurs in the autumn on the Shetland coast; and on the coasts of Ireland it is common in suitable localities at all seasons of the year, except during the breeding-season.

In Greenland it is common, and breeds in great numbers in the Polar Sea, but is stated not to nest further south than in 70° N. lat. It arrives in Iceland, Faber says, about the same time as *Bernicla leucopsis*, but is rare, being only found here and there. He says, however, that a nest of this species was found at the end of June 1819, inland from Eyjarfjörðr; and Professor Newton adds that Mr. Baring-Gould was told that this as well as three other species of Geese bred on the islands at Myvatn, and that the name of this was "Margás." It visits the Færoes during the two seasons of passage, but does not breed there. Captain Feilden received the skin of one killed at Qualvig, on Stromö, in May 1872. Mr. Collett informs me that it is not known to breed in Norway, but vast numbers occur on passage, in the spring keeping along the outer islands, and on the return journey in autumn nearer to the coast. It is very seldom seen in the interior. On the south-west coast it winters in larger or smaller numbers; and examples have been shot at that season at Bergen and on Jæderen.

On passage it is common in Sweden, arriving in the southern districts from the north in large flocks late in September or early in October, passing on southward to return again on its way north in April or May. Dr. Palmén says that it is regularly to be met with on the shores of the Gulf of Finland during passage, but only rarely in the spring on those of the Gulf of Bothnia.

On the north coasts of Russia, in Novaya Zemlya, and Spitzbergen it is common. Professor Newton writes (Ibis, 1865, p. 512), "In Parry's expedition, on the 16th June, a nest of this bird, with two eggs, was brought on board from Ross Islet, lat. 80° 48′ N.—perhaps the most northern land ever visited by man. It was then also seen in large flocks about Walden and Little Table Islands. Dr. Malmgren found it breeding on the Dépôt Holm, and also on the shore of the mainland in Treurenberg Bay—the latter fact proving Professor Torell's remark, that it only breeds on islets, to be an imperfect generalization. Messrs. Evans and Sturge, to whom I am indebted for specimens of its eggs, found it breeding on the South-Cape Islands. One of

our party killed a young bird, hardly able to fly, on Round Island." It is stated to be very numerous in Novaya Zemlya; and Mr. G. Gillett records it (Ibis, 1870, p. 308) as being "common in Matthew's Straits." It occurs off the coasts of the White Sea; but Messrs. Seebohm and Harvie-Brown did not observe it on the Petchora river. In Central Russia it is very rare; for Mr. Sabanäeff informs me that he only knows of one instance of its occurrence in the Moscow Government, but he believes that it is found on passage in the Ural, though he himself did not see it. It is also rare in Poland; and Mr. Taczanowski informs me that there is a single Polish-killed example in the Warsaw Museum; but on the coasts of North Germany, Borggreve says, it is common; and on the Danish coasts it is the most numerous of all the Geese on passage, arriving in September, and remaining in mild seasons throughout the winter, passing northward again late in May or early in June. On the coasts of Holland and Belgium it is tolerably common in winter, and is often seen in large flocks; but Messrs. Degland and Gerbe say that on the northern coasts of France it is less numerous than the Barnacle, and is almost always seen on the sea-coast. Off Dunkerque it appears in the autumn and winter after a north wind, and in the spring after a gale from the east. In the south of France it is of rare occurrence. It is doubtful if it is found off the coast of Portugal; and it has not been recorded from Spain. Salvadori states that it is a rare straggler to Italy, and, on the authority of Perini, that one was killed on the 24th of December at Bovolene, in the Veronese territory. It also straggles occasionally into Southern Germany. Dr. Fritsch says that it is rare in Bohemia; Palliardi saw several in 1841; he received one from Eisenberg on the 6th of March, 1850, and Mr. Hromádko one in October 1851 at Pardubic. Mr. Lokaj also purchased two in the Prague market in the autumn. In the Vienna Museum there is a specimen from Hungary, and another which was obtained near Vienna in December 1844; and Messrs. Danford and Harvie-Brown state (Ibis, 1875, p. 426) that it is very rare in Transylvania, but has occurred in various parts of the country. I do not find it recorded from Turkey, Greece, or Asia Minor; but it occurs in Southern Russia in winter; and Canon Tristram states (Ibis, 1868, p. 328) that it has been met with on the coast of Palestine. Von Heuglin says (Orn. N.O.-Afr. p. 1292) that it visits Egypt in winter but rarely, and probably not every year. He never saw it alive, but in February and March saw a tolerable number exposed for sale in the markets at Alexandria and Damietta. The present species is also found in Northern Asia. Von Middendorff says that it appeared on the Taimyr on the 4th (16th) June, and bred there. On the 15th July (O. S.) he saw newly hatched young. Although he only saw two pairs during the summer, yet between the 11th and 15th of August large flocks were passing northwards. It breeds, he adds, also on the Boganida; and I may mention that he gives a very good figure of the young in down. I do not find it recorded by any of the other Siberian travellers; and I cannot say how far south it ranges in Asia.

In America it is very common in the Hudson-Bay territory, where it breeds, and in winter ranges far south. I used to see large flocks on the coasts of the Bay of Fundy during the seasons of passage; and it is common during the winter on the coasts of Texas. On the Pacific coast it is replaced by a closely allied species (*Bernicla nigricans*), which differs in having the black on the jugulum extended over most of the underparts, gradually fading behind; and the white neck-patches are usually larger, and meet in front. I have not been able to examine more than a couple of specimens of this Goose, which do not appear to be quite mature in plumage, and I

am therefore unable to speak positively from personal observation respecting the validity of the species; but it is very generally recognized by American authors.

I am indebted to Captain H. W. Feilden for the following notes respecting the range, habits, and nidification of the Brent Goose in the Arctic regions, as observed by him on the recent Arctic expedition:—"This species of Goose extends its range further north than any other in the American Arctic circle as well as in the Old World. *Bernicla hutchinsi* is recorded by James Ross from Melville Peninsula and Boothia; but its range does not appear to extend northward beyond those regions; for Sabine only found *Bernicla brenta* on Melville Island, where it bred in great numbers, and it seems to be the only species met with in the Parry Archipelago by any of the Franklin Search Expeditions that proceeded through Lancaster Sound. The members of the United-States 'Polaris' Expedition found this species not uncommon during July, August, and the commencement of September in the vicinity of Polaris Bay, lat. 81° 38′ N.; and the sledging-parties of H.M.S. 'Discovery,' whilst detained at the same place in July and August 1876, procured a considerable number. The Brent Goose is, in fact, generally distributed on both sides of Robeson Channel, as well as along the shores of the Polar Ocean, on both the Grinnell-Land and Greenland coasts. This species was observed in the neighbourhood of Floeberg Beach, the winter-quarters of H.M.S. 'Alert,' lat. 82° 27′ N., as early as the first week in June 1876; and four were shot on the 9th June by Lieutenant Egerton, R.N., in lat. 82° 33′ N. On the 12th June, 1876, my note-book has the following entry:—'Six Brent Geese in pairs passed the ship, flying south: all of this species seen up to this date have been following the coast-line either up or down; none have been observed flying due north over the Frozen Ocean, as one would have expected were their breeding-haunts still nearer the pole.' On the 21st June I was hunting with Lieutenant Parr, R.N., in Hare Ravine, Grinnell Land, lat. 82° 32′ N. By this time the Brent Geese had settled down to breed. Some six pairs were noticed by us in this locality; and the nests were placed upon the slopes of the hills between the line of snow and the sea-ice. The nests were made in slight depressions with a good foundation of grass, moss, and stems of saxifrages, on which was placed a warm bed of goose-down, in which the eggs were deposited, the usual number being four. The gander generally remained near his mate; and in one instance, after I had shot the female off her nest, the gander came hissing at me with neck bent down and head close to the ground, in the same manner as our farm-yard Geese resent intrusion on their premises.

"The Brent Goose is quite capable of defending its eggs; for in one instance I observed a Snowy Owl (*Nyctea scandiaca*), passing too near the nest of a Goose, hotly pursued and followed by that bird, who thus disclosed the exact position of her nest to me. During the period of courtship the goose and gander rise to a great height in the air by spiral flights, and indulge in long series of antics, very unlike their usually staid and methodical behaviour.

"On the 25th June 1876, Lieutenant Parr and I decided to visit Simmonds Island on our return to the ship from Hare Ravine, in hopes of finding some birds nesting on it. Leaving our camp at 12 meridian, we dragged our sledge onto the shore-ice; the smooth or one season's ice extended for about a mile seaward; and though it was covered at this time of the year with a layer of icy-cold water, which reached to our knees, yet, beyond the discomfort of wading through water at 32° Fahr., the travelling was tolerable and the sledge pulled easy; but when we reached

the old floe, and from there to Simmonds Island, the travelling was truly execrable. In the sodden snow which lay between the ice-hillocks and ridges of the ancient floes, we often sunk to our hips, and slush and ice-cold water reached above our knees. Over and over again, as we tugged at the deeply imbedded sledge, it moved suddenly forward, throwing us on our faces, and we found no little difficulty in regaining an upright position. However, we reached Simmonds Island by 6 P.M., took our guns and walked round it. We saw four pairs of Brent Geese on it. I found three nests; one contained five eggs, the others four. The nests, as usual, were solid structures of grass and moss, the eggs being imbedded in a mass of down. We secured five out of the eight Geese inhabiting this island. By 8 P.M. we were back to the sledge, lashed on the dead Geese, and were once again in the drag-ropes. The journey from the island to the mainland was equally arduous as that we had encountered before; and our sufferings were aggravated by its blowing half a gale of wind from the S.S.W. We reached our camping-place on the mainland at 12 P.M. nearly exhausted, and so benumbed by cold that it was as much as we could do to prepare a goose for supper.

"The stomachs of all the Brent Geese I examined in Grinnell Land showed that they had been feeding exclusively on vegetable substances, chiefly the buds of *Saxifraga oppositifolia*.

"On the 17th July 1876, when returning from another expedition in company with Lieutenant Parr, we came across a pair of Brent Geese escorting three down-clad young ones, on the shore-ice, near Mushroom Point, lat. 82° 30′ N. These old birds were most assiduous in taking charge of their young. Both goose and gander fluttered above their little ones and urged them to the cracks in the floe, evidently thinking that, once in the water, they would be safe. It seemed very cruel to kill these poor birds; but we wanted every scrap of fresh meat for our sick men. Both of these old birds were in excellent feather, and showed no signs of moult. This, however, was not usually the case; for by the end of the month of July the old birds, with a few exceptions, were unable to fly, owing to the moult of their quill-feathers, and, with the goslings, congregated on the partially unfrozen surfaces of inland lakes. On several occasions we killed considerable numbers under these circumstances. Though unable to fly, they were well able to run; for more than once we disturbed large parties feeding on the land at some distance from the lakes, to which they hastened with great speed, and took up a position on the water well out of gunshot. This stratagem on their part was overcome by getting one of our Eskimos to launch his kayak on the lake, and drive the unsuspecting birds to the points where we lay concealed. The slaughter that ensued could only be justified by the fact that we had sick men on board who required fresh meat."

During the winter, when this Goose migrates southward, it frequents the sea-coast; and I never recollect to have seen it at any distance inland, though it does sometimes occur there as a straggler. It is generally to be found in flocks of considerable size on the sea-coasts, especially in places where there are large open spaces of mud or sand covered with sea-weed, where it can find an abundance of food at low water. When these flats are covered by the sea it may be seen swimming about at some distance off the shore; but so soon as the water recedes it commences feeding on the juicy rhizomata of the *Zostera marina*, which afford them a most nutritious food. I have also seen them on the rocky shores of the Bay of Fundy, where they appeared to feed out on the outer rocks, which at low water were left bare. They were then on passage, and were

moving north in numerous flocks, which were scattered about as far out as one could see. In their flight they resemble the larger geese, but fly swifter than those, and in more irregular order, seldom, unless flying at a great altitude, forming a long line of flight. Though shy I have not found it so wary as the larger species of Geese; and occasionally some of the flocks would permit a very near approach, though as a rule they seemed to keep well out of gunshot-range. When flying they frequently utter a harsh goose-like call, one flock seeming to answer the other; and at some distance the confused noise reminds one strongly of a pack of hounds in full cry.

The Brent Goose swims with ease, and very fast, its general appearance when on the water resembling that of its larger allies. I have seen it when in shallow places searching after food with the head and neck extended down below the surface, but do not recollect to have ever seen one dive—though Thompson says that they do dive, but remain only a short time below the surface.

The present species feeds on grasses, sea-weed, small shell-fish, and marine insects—chiefly, however, on the former; and, like the larger Geese, it is frequently seen grazing on grassy places near the shore. It sometimes also visits the arable land and stubble-fields in search of corn, and is said to evince a preference for oats.

The Brent Goose breeds in high latitudes, in the northern portions of Greenland and Spitzbergen, making a somewhat bulky nest of grass and moss lined with a dense bed of down, in which the eggs, five in number, are placed. I give above a full account, from the pen of Captain Feilden, of the nest and breeding-habits of this Goose in the Arctic regions.

In my collection are eggs of the Brent Goose from Greenland and Spitzbergen, which are creamy white in colour, smooth in surface of shell, and measure from $2\frac{34}{40}$ by $1\frac{33}{40}$ and $2\frac{30}{40}$ by $1\frac{37}{40}$ to $2\frac{35}{40}$ by $1\frac{34}{40}$ inch.

The specimen figured, on the same Plate with the Barnacle Goose, is the adult bird above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, juv. Skara, Sweden, autumn (*Meves*). *b*, ♂, *c*, ♀. Point Lepreaux, New Brunswick, April 7th (*H. E. D.*).

BERNICLA LEUCOPSIS.

(BERNACLE GOOSE.)

Anser bernicla, Briss. Orn. vi. p. 300 (1760).
Anser bernicla minor, Briss. Orn. vi. p. 302 (1760).
?*Anas hrota*, O. F. Müll. Zool. Dan. Prodr. p. 14 (1776).
La Bernache, Buff. Hist. Nat. Ois. ix. p. 93 (1783).
Anas leucopsis, Bechst. Orn. Taschenb. ii. p. 424 (1803).
Anser leucopsis, Bechst. Gemeinn. Naturg. Deutschl. 2nd ed. iii. p. 921 (1809).
Anser bernicla, Pall. Zoogr. Rosso-As. ii. p. 230 (1811, nec Linn.).
Bernicla leucopsis (Bechst.), Boie, Isis, 1822, p. 563.
Bernicla erythropus, Steph. in Shaw's Gen. Zool. xii. pt. 2, p. 49 (1824, nec Linn.).
Branta leucopsis (Bechst.), Bann. Proc. Phil. Ac. Nat. Sc. 1870, p. 131.

Bernacle, *Claik-Goose*, English; *Cathan*, Gaelic; *Oie-bernache*, *Bernache nonnette*, French; *Weisswangen-Gans*, *Bernakel-Gans*, German; *Brandgans*, Dutch; *Bramgaas*, Danish; *Brangaas*, Færoese; *Hrota*, *Mar-gies*, Icelandic; *Hvitkindad-Gås*, Swedish.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 855; Werner, Atlas, *Palmipèdes*, pl. 32; Kjærb. Orn. Dan. taf. 45; Frisch, Vög. Deutschl. taf. 189; Fritsch, Vög. Eur. taf. 45. fig. 1; Naumann, Vög. Deutschl. taf. 291; Sundevall, Svensk. Fogl. pl. 57. fig. 4; Gould, B. of Eur. pl. 350; id. B. of G. Brit. v. pl. 5; Schlegel, Vog. Nederl. pl. 284; Audub. B. of Am. pl. 378.

Ad. fronte, capitis lateribus et gulâ albis, striâ nigrâ inter rostrum et oculos: vertice, occipite et collo toto ad sternum nitidè nigris: dorso et alis suprà pallidè cærulescenti-cinereis, apicibus pennarum nigricantibus, albido plerumque marginatis: uropygio et caudâ nigris, uropygii lateribus et supracaudalibus albis: remigibus extùs cinereis, intùs et ad apicem nigricantibus: corpore subtùs albo, hypochondriis indistinctè griseo fasciatis: rostro et pedibus nigris: iride fuscâ.

Juv. adulto similis sed fronte et capitis lateribus vix nigro guttatis et plumis in corpore suprà sordidè rufescenti-fusco et nigro-fusco marginatis.

Adult Male (Lichtenfels, S. Greenland, 18th May). Fore part of the crown, sides of the head, and entire upper throat white; feathers at the base of the upper mandible, and a patch extending to the eye, black; hind crown, nape, and entire lower and hind neck, breast, and fore part of the back deep glossy black; feathers on the fore part of the back narrowly tipped with brown, those on the rest of the back ashy grey broadly tipped with blackish; centre of the rump black; upper tail-coverts and sides of the rump white; tail black; quills blackish brown, the outer webs, except towards the tip, ashy blue-grey; wing-coverts and scapulars ashy French grey, more or less broadly terminated with blackish brown, and finally narrowly tipped with white; underparts white, the flanks indistinctly barred with pale

greyish; legs and bill black; iris dark brown. Total length about 25 inches, culmen 1·65, wing 15·8, tail 5·9, tarsus 2·85.

Adult Female. Resembles the male, but is smaller in size.

Young. Differs from the adult in having the white on the head intermixed with black, and the feathers on the upper parts are margined with dark reddish brown and blackish brown.

The Bernacle or White-cheeked Goose, like the Brent, inhabits high latitudes during the summer season, migrating southward during the winter. It is found throughout the north of Europe, being tolerably widely distributed; but, so far as I can ascertain, there is no authentic information on record respecting its breeding-habits. With us in Great Britain it is a winter visitant, arriving in October and remaining until April, during which time it is distributed around our coasts in suitable localities; but it is, as a rule, not so common as the Brent Goose on the English coasts, and less numerous on the east coast than it used formerly to be. Mr. Stevenson writes to me respecting the occurrence of this Goose in Norfolk as follows:—"The term 'not uncommon,' as applied to this species by Messrs. Paget in 1834, and by Messrs. Gurney and Fisher in 1846, is certainly not applicable at the present time; nor can I give any satisfactory reason for its rarity of late years on our coast, even in the most severe winters. My own notes for the last twenty years supply but a small list of specimens observed at long and uncertain intervals, either in the Norwich market or bird-stuffers' shops; nor have I any reason to suppose that it has occurred more frequently at Lynn, the chief emporium for this class of wild fowl. Mr. Dowell describes the Bernacle as only an occasional visitant at Holkham, and rare at Blakeney; and a specimen sent him from Salthouse, as late as the beginning of May 1846, was one of but three examples he had known killed on that part of the Norfolk coast. In my own notes the first record dates back to the mild winter of 1851–52, when, as before stated, wild geese of various kinds were unaccountably numerous, and amongst these, on the 20th of December, two couple of Bernacles, in full adult plumage, were sent to Norwich from Hickling, and on the 28th a single bird from Burlingham. In the winter of 1854–55 I saw but one Bernacle Goose, killed toward the close of that most inclement season at Kimberley, on the 18th February; and these, with an immature bird shot at Blakeney in November 1860, and two in the Norwich market in the following January (another exceptionally severe winter), are all that have come under my notice. For the last ten years I have neither seen nor heard of a Norfolk-killed specimen; nor could I ascertain that any were remarked either at Lynn or on any other part of the coast throughout the long and severe winter of 1870–71."

In Scotland this bird appears to be much commoner than in England; and Mr. Robert Gray writes (B. of W. of Scotl. p. 350) as follows:—"Throughout the Inner Hebrides the Bernacle is also a well-known winter visitant to localities where there is suitable feeding-ground. I have been informed by Mr. Elwes that it frequents Islay in very large flocks every year, where it seems to attach itself to an island near Ardnave. Being but little disturbed there, and finding plenty of grass on the island and on the sandhills of Ardnave, these flocks remain the whole winter. At low water they often betake themselves to the open sands at the mouth of Loch Grhuinard, but make the island their head quarters, and go but seldom to feed on the shore

until they have eaten up all on the island. They are not so shy as the Grey Geese, and, when feeding busily, may be approached with ease under cover of the sandhills. They keep up a constant cackling, both when feeding and when on the wing, being in this respect unlike the Grey Geese, which usually feed in silence. The Bernacle Goose seems essentially a land-bird, and is never known to settle on the water unless constantly shot at. It feeds entirely on grass and the roots of the bents which grow on the sandhills. Gastronomically considered, the Bernacle is by no means equal to the Brent Goose."

In Shetland the Bernacle is a rare species; and Dr. Saxby says that he saw it once at Balta Sound, but knows of no instance of one having been obtained on those islands. On the coasts of Ireland it is, Thompson says, a regular winter visitant, and is not uncommon.

It is found in Greenland and Iceland. Professor Newton says that it is a regular autumnal visitor to Julianehaab, and may perhaps breed in Greenland. Graah records it from the east coast of that country; and, according to Faber, it arrives in Iceland about the middle of April and leaves about the middle of October. He found it most abundant in the south-west, though not rare in the north; but it has not been met with breeding there.

Captain Feilden mentions but three instances of its occurrence in the Færoes:—one of a male, which was winged on Great Dimon in June 1864; a second was shot on the 20th November 1867, at Kirkeboe; and a third at the same place on the 30th of January 1868.

It rarely touches Norway, Mr. Collett says, during passage; stragglers are only met with now and then in various parts of the country. This, however, is by no means the case as far as Sweden is concerned; for Nilsson says that it is common in spring and autumn in that country, arriving in the autumn late in September or early in October in large flocks on the coasts of Southern Skåne, and returning again in March on its passage northward. It is rare on the coasts of Finland, but is met with now and again on passage in the Gulf of Finland, usually in the spring of the year. In the north of Russia it appears to be less common than the Brent; and I have been able to obtain but little information respecting its occurrence there. As regards Spitzbergen, Professor Newton (Ibis, 1865, p. 512) doubts that it has ever been obtained there, and believes that the record of its having been shot there rests on a confusion between it and the Brent Goose; but Professor Malmgren states (Ibis, 1869, p. 230) that "it certainly is an inhabitant of Spitzbergen." Many were seen in Advent Bay; and Dr. Smith killed one in the beginning of August. Subsequently the Rev. A. E. Eaton met with this species in Spitzbergen, and obtained seven specimens; so there is no doubt that it is found there. This last gentleman writes (Zool. 1874, p. 3815) as follows:—"We started on the evening of the 22nd of July (James Kidd and I) to visit a lakelet on the hills opposite Diana Island. Mr. Potter had reported the previous night that there were some queer-looking birds on it, such as he had never seen before; and Mr. Leigh Smith said that in 1872 some of the same kind were found by him there, but they had not shot any. On our first arrival at the edge of the lake we could see nothing but a pair of Red-throated Divers swimming; and we therefore concluded that either these were the birds we had come so far to see, or that the strangers had departed. In a minute or two, however, we found that they had not gone; for there they were putting off from the shore at the other end of the water—a dozen or more of Bernacle Geese. Our plans were formed at

once. Kidd took up a good position halfway down one side of the lake, I manœuvred with a very ugly dog on the other. After much shouting, stone-throwing, and violent gesticulation on my part, and a good deal of running about on the part of the frightful cur, the whole line of the Geese was driven within range of Kidd's gun. He gave them a warm salute. Six birds were placed *hors de combat* at his first discharge; another barrel completed the slaughter of the seventh. The astonished survivors betook themselves with all haste to a remote corner of the lake, and did not once take their eyes off Kidd while we were waiting for the dead to be floated ashore. As soon as they had seen us to a distance in one direction, they ran off as fast as their legs would carry them the other way, without stopping, until they reached the sea. I saw them there through a telescope the next day but one. Directly they saw me approaching within a mile of them they paddled out to sea at full speed, looking round as they went to make quite sure that they were not being pursued. If they could have flown, they would; but moulting put flight out of the question completely."

In Central Russia, Mr. Sabanäeff informs me, it is rare; but in the Ural it is more numerous than the White-fronted Goose during migration, and numbers are seen on the lakes. In Poland it is very rare; and Mr. Taczanowski informs me that there is only one Polish-killed specimen in the Warsaw Museum, which was killed on the Vistula. On the coasts of Germany, and especially on the Baltic coasts, it is less common than the Brent; but in Denmark it occurs not unfrequently on migration, and, according to Melchior, large numbers are seen in Southern Falster in the spring and autumn. Mr. Collin says that it arrives in September, remains until November, and then passes south, to return again in April, when it remains but a short time on its road north. It occurs also on passage on the shores of the German Ocean; and Professor Schlegel states that it is now and again seen on the coast of Holland, but only in small numbers and during severe cold; and the same may be said respecting its occurrence in Belgium. It is found on passage on the coasts of Flanders, and at the mouth of the Escaut from November to March; but it is rarely met with in the interior, though it has been killed on the Meuse, near Namur. In the north of France it is met with in November, December, and January, especially during severe seasons, and repasses again in March; but in the south of France it is of very accidental occurrence during winter. I do not find it recorded from Portugal; and with respect to its occurrence in Southern Spain, Colonel Irby says (Orn. Str. Gibr. p. 196) that one obtained some years ago near Seville was in the possession of the landlord of the Fonda de Europa, and was, he thinks, possibly an escaped bird from San Lucar. Mr. Howard Saunders also states (Ibis, 1871, p. 396) that he saw one at Seville which had been shot on the marisma; but possibly this may have been the same specimen as is above referred to by Colonel Irby. In the countries bordering the Mediterranean it is of very rare occurrence, and does not appear to have occurred in Italy—for it is omitted by Salvadori,—and has not been observed in Greece; but it has been obtained in Southern Germany. Dr. Fritsch says that it has been met with twice in Bohemia—one having been killed, it is said, on the Frauenberg pond, and one near Leban in 1842.

In Asia it is of rare and almost doubtful occurrence. Von Middendorff did not meet with it in Siberia; but the Jakuts and Samojedes assured him that it was not rare in the Taimyr country. Neither Radde nor Von Schrenck met with it in South-east Siberia. Naumann says that it visits Japan; but this statement requires confirmation. In North America, Dr. Coues

says, it is of very rare or casual occurrence, but has been met with in Hudson's Bay and North Carolina.

It is somewhat remarkable that the breeding-haunts of this Goose are unknown. It doubtless breeds in Greenland, and also, as would appear from Mr. Eaton's notes, in Spitzbergen; but, so far as I can ascertain, there is no authentic account of its nidification, and its egg is still a desideratum in collections. Some time ago Mr. Collett sent me two eggs which he believes to be those of this species; but positive proof is wanting. He wrote (Orn. N. Norw. p. 93) respecting these eggs as follows:—"The occurrence of this species, almost sporadical as it is, in the Arctic regions of Greenland, Iceland, Spitzbergen, and Novaya Zemlya renders it not improbable that single pairs, retarded perhaps at first on their passage, remain behind and breed on the outermost islands lying off the northern coast of Norway;" and this opinion derives additional support from the following facts:—"In 1870 I procured from Borgevær, a well-known Fuglevær and Fiskevær, facing the Arctic Ocean, on one of the most northern of the Lofoten Islands, in 68° 15′ N. lat., through the kindness of Mr. Irgens, the proprietor, two eggs, taken that summer, of a species of Goose smaller in size than those of any of the genus that I had previously examined. In both the length was 67 millims., the breadth being 45 and 46 millims. respectively. The shape was cylindrical much rounded at the ends; the shell was hard, with large pores, in colour shining white with an almost imperceptible tinge of yellowish. The size of these eggs (for they were scarcely bigger than normal eggs of *Mergus serrator*) induced me to record them (Vid. Selsk. Forh. 1871, p. 59) as those of *Anser erythropus*, albeit the Borgevær preserve, owing to its westerly position and diverse local reasons, did not apparently fulfil the conditions of the occurrence of this species on the Scandinavian peninsula; but since then several important circumstances have led me to doubt the correctness of this assumption. . . . .

"Mr. Irgens has kindly supplied me with the following data bearing on this question, viz.:—'A pair of Geese with white cheeks, but having the rest of the plumage and feet dark, arrive regularly every season at Borgevær about the 1st of May, a fortnight later than the common Grey Goose. We call it Fjeldskarv, as it has a slight resemblance to a Skarv (Cormorant) or Finmark Goose. It is exceedingly shy in its habits, and difficult to approach. This year (1872) it had deposited its first egg, which was taken, by the 9th of May, whereupon it moved off to a neighbouring islet. It builds a nest composed of moss and straws, sometimes on the narrow ledges of the rocks, and sometimes in a sheltered locality under stones or isolated rocky masses. The full complement of eggs is five. This is the only pair that breed at Borgevær; and they have been regular visitants for some years past, though never allowed to hatch their first brood.'" To this I may add that Mr. Collett has lately informed me that on his last visit to Northern Norway he convinced himself that the pair of Geese which visit Borgevær are really *Bernicla leucopsis*; and on comparing the two eggs with my series of eggs of *Anser erythropus* they are most certainly not those of this latter species, and there is every probability, therefore, that they really are those of the Bernacle Goose.

One or two of the later authors on ornithology have endeavoured to resuscitate Scopoli's generic title of *Branta* for the present species and its allies *Bernicla brenta* and *Bernicla ruficollis*; but I cannot see the propriety of so doing, and fully agree with Messrs. Sclater and Salvin (*vide* P. Z. S. 1876, p. 361) that *Branta* of Scopoli is an artificial group composed of species

which have no sort of natural affinity, and should therefore be discarded, more especially as *Branta* of Boie has been so generally used for *Fuligula rufina*.

The specimen of *Bernicla leucopsis* figured, on the same Plate with *Bernicla brenta*, is the adult bird above described, and is in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a. Leadenhall Market. *b*, ♂. Lichtenfels, S. Greenland, May 18th, 1874 (*Dr. O. Finsch*).



1/4

M&N.Hanhart imp

RED-BREASTED GOOSE.

BERNICLA RUFICOLLIS.

BERNICLA RUFICOLLIS.

(RED-BREASTED GOOSE.)

Die Moppelgans (*Anser peregrinus*), Fritsch, Vorstell. Vög. Deutschl. Suppl. pl. 157 (1763).
Anser ruficollis, Pall. Spicil. Zool. vi. p. 21, tab. v. (1769).
Anas torquata, S. G. Gmel. Reise Russl. ii. p. 179, pl. 14 (1774).
Die kleine Kaszarka, Lepech. Reis. Russ. Reiches, 11. Anhang, p. 183 (1775).
Anas ruficollis (Pall.), Gmel. Syst. Nat. i. p. 511 (1788).
Anas torquata (S. G. Gmel.), Gmel. tom. cit. p. 514 (1788).
Bernicla ruficollis (Pall.), Boie, Isis, 1822, p. 563.
Rufibrenta ruficollis (Pall.), Bp. Comptes Rend. xliii. p. 648 (1856).

Bernache à cou roux, French; *Rothals-Gans*, German; *Roodhalsgans*, Dutch; *Speilgaas*, Danish; *Tschakwoi*, Russian.

Figuræ notabiles.

Werner, Atlas, *Palmipèdes*, pl. 34; Kjærb. Orn. Dan. taf. 45; Frisch. Vög. Deutschl. Suppl. taf. 157; Naumann. Vög. Deutschl. taf. 293; Sundevall, Svensk. Fogl. pl. 82. fig. 2; Gould, B. of Eur. pl. 351; id. B. of G. Brit. v. pl. 6; Pall. *l. c.*

♂ nitidè niger: plagâ lorali, maculâ suboculari et fasciâ ab oculo postico ductâ usque ad colli latera alba, et faciem lateraliter transeunte, plagam magnam castaneam auricularem circumeunte, albis: gutture toto cum fasciâ latâ per genas medias traductâ et oculum circumeunte nigris: pectore antico et collo laterali undique lætè castaneis, torquem collarem interruptum formantibus: fasciâ corpus anticum circumeunte, albâ: corpore reliquo nigro, vix virescenti nitente: tectricibus alarum albicanti marginatis: uropygii lateribus et tectricibus supracaudalibus cum abdomine toto et corporis lateribus, purè albis: hypochondriis nigro et albo fasciatis: subalaribus nigris.

Altera avis adulta mento albido et gutture imo albo nigro variegato, nec omninò nigro, differt.

♀ mari similis, sed omnino sordidior: plagâ auriculari fuscescente paullò rufescente et albo lavato: tectricibus marginibus grisescenti-albidis: caudâ albo terminatâ: pectore nigricante, parte mediâ albicante.

♂ *jun.* similis præcedenti, sed nigredine gutturis magis extensâ paullulum rufo lavatâ.

Adult Male in breeding-dress. Entire crown of the head, extending from the forehead far on the back of the neck, black; entire throat, fore part of the cheeks and a band encircling the eye and joining the crown, also black; a large loral patch, a spot under the eye, and a broad stripe extending backwards from the hinder part of the eye onto the sides of the neck, and another stripe extending downwards onto the neck and then proceeding backwards and joining the sides of the neck, pure white; a very large auricular patch deep chestnut, entirely surrounded by the before-mentioned white line; on the throat the black narrows in the centre of the lower portion; the whole of the fore part of the chest, and sides of the neck extending far backwards and forming an interrupted collar, deep brick-red; a narrow white

band encircling the whole of the fore part of the body margined on both sides with black; rest of the body glossy black with slight greenish reflexions, excepting the edges to the wing-coverts, which are greyish white, and the rump, abdomen, and sides of the body, which are pure white; the flanks are banded slightly with black; under tail-coverts white; under wing-coverts black; bill and feet black; iris dark brown. Total length 20 inches, culmen 1·0, wing 14·5, tail 6·0, tarsus 2·1.

Another male, almost but not fully adult, differed from the foregoing only in having the black throat slightly varied with white, and the chin itself whitish; the black line down the centre of the neck was not very well pronounced, and did not join the chestnut throat, being crossed at the point of juncture by the white of the side of the neck, which in this specimen formed a band across the throat; the auricular chestnut patch was also not quite so bright.

Female. In general similar to the male, but the colours very much duller, the black of the upper surface tinged with brown, and having a few whitish edgings to the feathers, especially on the rump; the black of the head carried right down the neck and joining the back, becoming dull brownish at the point of juncture; the edges of the wing-coverts of a decided greyish white; all the white bands which form the pattern of the head edged with brownish; the black markings not nearly so deep as in the male, and everywhere edged with whitish; the auricular patch brown, marked with black and also tinged with whitish; chin whitish; the black of the throat dull, mixed with rufous, and not extending so far down on the throat as in the male; the breast coloured as in the male, but much duller, and very much mixed with white down the centre; the tips of the tail-feathers white.

Young Male. Very similar to the last described, but the plumage in some respects more perfect; the auricular patch scarcely indicated by greyish white feathers in which a slight tinge of rufous appears; the black on the throat not extending so far down the breast as in the adult male, but carried right up to the chin; as in the last described, the tail is tipped with white.

Obs. Although the two last-mentioned specimens have been described as ticketed, I cannot but believe that there has been some mistake in the labels, and that the bird described as the *young male* is really the female, and *vice versâ*.

This, one of the rarest of our Geese, is only known as a rare straggler in Europe, except in the extreme east, but it breeds not unfrequently in Northern Siberia. It has been several times obtained in Great Britain. Mr. More, in his catalogue of the birds of Devon, records the occurrence of one at Kenton Warren, in Devonshire, in 1828, and one, Teign Marshes, on the 1st February, 1837. One, formerly in the possession of Mr. Harting, and now in the collection of Mr. Marshall, was killed at Maldon, in Essex, on the 6th January, 1871; one was, according to Fox, obtained near London in 1776; one was shot at Halvergate, in Norfolk, in 1805; and one in Cambridgeshire in 1813. Bewick records the occurrence of one near Wycliffe, in Yorkshire; and Hogg states that two were seen on the Tees, near Durham, not long prior to 1845, and one shot in Cowpen Marsh, Durham, about the same time. Mr. R. Gray, writing respecting its occurrence in Scotland, says (B. of W. of Scotl. p. 352) "the late Dr. Fleming, in his meritorious work on British animals, thus announces the occurrence of a specimen of this rare straggler in Scotland:—'One was shot near Berwick-on-Tweed by Mr. Burney, gunsmith, and sent to Mr. Bullock, in whose possession I saw it in May 1818.' Another, said to have been killed in the county of Caithness, is alluded to by Mr. Wilson; but the date and precise locality

are not given; the specimen is still preserved in the collection which belonged to the late Mr. Sinclair, of Wick. A third appears to have been seen for several days in the immediate vicinity of the Loch of Strathbeg many years ago, a notice of which was sent to Professor Macgillivray by Rev. Mr. Smith." Thompson (B. of Ireland, iii. p. 64) writes as follows:—"When in Dublin, in March 1833, I was informed by a person, to whom the species was well known, that about five years previously he had seen a specimen in the shop of Mr. Glennon; on inquiry of whom I learned that the bird had been sent to him in a fresh state to be preserved, but he was not aware where it had been killed. That it was procured on our coast is at least a fair inference."

There does not appear to be any record of its occurrence in Norway; and it is an extremely rare straggler to Sweden. Nilsson says that the specimen described by Professor Retzius in his 'Fauna Suecica' was taken alive at Lund early in October 1793, and was in immature plumage. An older bird was caught in a ditch on the road-side near Ystad in the late autumn of 1830. "Many years ago," he adds, "one was shot at Oscarshamn; and in the spring of 1838 Mr. Ekström saw a pair standing on a tussock in a marsh amongst some Mallard on Mörkö." It has not been recorded from Finland. In Russia in Europe it is, Mr. Sabanäeff informs me, very rare in the central portion. Mr. Martin once met with it near Moscow; but, according to Bogdanoff and Eversmann, it occurs in small numbers on passage, but not further north than the latitude of Orenburg and Sarepta. Daniloff met with it in the Orloff Government.

Mr. Jacovleff says that it visits the vicinity of Astrachan every spring, but it is rare; and Rickbeil speaks of it as being also of very rare occurrence near Sarepta. According to Pallas it is seen late in February or early in March in numbers, together with *Anser erythropus*, near Astrachan. In Germany, as elsewhere in Europe, it is a rare straggler. Naumann says that some time ago one was obtained on the island of Köos, on the coast of Pomerania, and more recently another was procured at the same place, but that he knows of no instance of its occurrence in Central Germany. He further states that it is said to have been "observed almost every year in small flocks of four or six individuals" at Ulriksholm, and at Ribe, in Denmark; but Kjærbölling says merely that, according to Mr. E. Hage, six were shot in Northern Seeland, one of which went to the Museum, and the rest to Germany; and Teilman once shot it at Ribe. Mr. Benzon informs me that, so far as he can ascertain, only two undoubted Danish-killed specimens are known to exist—one an old male in the collection of Mr. Fischer, which was shot on the 24th October, 1855, at Ourö, in the Isefjord, after having consorted with tame Geese for about eight days; and a second specimen is in Mr. Benzon's own collection. This latter bird was winged at Ömager, on the 25th September, 1862, when in company with a flock of Brent Geese, and was kept for some time alive in the Zoological Gardens. Mr. H. M. Labouchere informs me that some years ago a flock of these Geese was observed in Holland, and several individuals were shot out of it; and Professor Schlegel states that it is met with in that country from time to time. Messrs. Degland and Gerbe write respecting its occurrence in France as follows:—"M. de Lamotte possesses a specimen shot near Strasbourg; M. de Lafresnaye obtained one in the market at Caen; and another, shot near the same town, is in the collection of Dr. Lesauvage; one shot on the marsh of St. Louis, near Rochefort, in the winter of 1829–30, is in the Museum of that town; and the gamekeeper to

the Marquis des Réaulx killed on the 10th December, 1856, a female or young male, which was sent to Mr. J. Ray." It does not seem to have been met with in Portugal or Spain; but two instances of its occurrence in Italy are recorded: one, a specimen now in the Milan Museum, obtained in Lombardy in 1833, is cited by Balsamo-Crivelli; and Professor Giglioli writes (Ibis, 1869, p. 242) as follows:—"On the 12th of February, 1869, a magnificent specimen of the rare *Bernicla ruficollis* (Pall.) was shot between Scarperia and Borgo San Lorenzo, twenty-two miles or thereabouts from Florence. It was an adult male in full plumage; and this, I believe, is the only well-authenticated case of the occurrence of this rare eastern Goose in Italy." According to Messrs. Elwes and Buckley (Ibis, 1870, p. 339) Colonel Drummond-Hay says that he once saw a Red-breasted Goose in Macedonia; but the other authors on the ornithology of Greece do not mention it. Professor von Nordmann does not appear to have met with it in Southern Russia, and merely cites what is recorded by Pallas. Some years ago Mr. Stafford Allen sent me a specimen from Alexandria, which appears to be the most southern locality where it has been obtained. According to Von Middendorff it breeds in Northern Asia. He says that he did not meet with it on the Taimyr river, but that it is said to breed commonly at the mouth of the Pasina. On the Boganida it breeds not unfrequently; and eggs taken by Von Middendorff on the 25th June were but slightly incubated. The egg is figured by him (pl. 20. fig. 3) in his Reise in Nord. & Ost. Sib. From Southern Asia I find no record of its occurrence, except that Blyth remarks (Ibis, 1870, p. 176) that the Geese, four of which were seen near Nagpore, and one procured (Beng. Sport. Mag. April 1836, p. 247), probably belonged to this species.

As the Red-breasted Goose is only a rare straggler with us, scarcely any thing is known respecting its habits in a wild state. We had a fine male for some time alive in our Zoological Gardens, which I frequently saw, and noticed that it much resembled the Brent Goose in its general habits. It became extremely tame, and would come to the edge of the enclosure to take food from strangers. Respecting the nidification of the present species all that is known are the few details published by Von Middendorff; but it has also been met with breeding on the Caspian. A single egg, one of two which were in the St.-Petersburg Museum, is now in my collection. It resembles the eggs of the Brent Goose, but is smaller, and the surface of the shell is rather smoother than in eggs of that species.

The specimens figured are an adult and young bird from Astrabad, both in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, b, c, d. Astrabad (*Dode*).

E Mus. A. Crichton.

a, juv. Alexandria, Egypt (*S. Stafford Allen*).

E Mus. J. Rocke.

a, ♂ ad. Astrachan (*Schlüter*).

E Mus. J. Marshall.

a, ♂ ad. Maldon, Essex, January 6th, 1871.

Genus CHEN.

Anser apud Brisson, Orn. vi. p. 288 (1760).
Anas apud Forster, Phil. Trans. lxii. p. 413 (1772).
Chen, Boie, Isis, 1822, p. 563.
Tadorna apud C. L. Brehm, Vög. Deutschl. p. 854 (1831).
Chenalopex apud L. Brehm, Naumannia, 1855, p. 297.

The species included in this genus, three in number, are inhabitants of the extreme north, chiefly in the Nearctic Region; but two species occur also in the Palæarctic Region—one, *Chen albatus*, as a rare straggler, and the other, *Chen hyperboreus*, more frequently in the north-eastern portion of that region. The third species, *Chen cærulescens*, is only found in North America.

In general habits, note, and in choice of habitat these Geese do not differ much from the common Wild Goose; but they are said to be rather more clumsy when on land. They feed on grasses, berries, and to some extent also on insects. Their flight is strong and steady; and they usually fly very high when migrating. They are mostly very silent birds, and are said to utter their cry only when pursued and in extreme fear. They breed in the Arctic regions, placing their nest on the ground like their allies, and deposit several yellowish-white eggs.

Chen hyperboreus, the type of the genus, has the bill much as in *Anser*; wings long, full, the second longest; tail short, rounded; legs moderate; tibia feathered to the joint; tarsus moderately long, reticulate; toes rather long, connected by a membrane; claws moderately long, oval, obtuse; plumage full, firm, the feathers on the neck rather narrow, inclined to form furrows, but not conspicuously ridged as in *Anser*; plumage in the adult bird pure white, except the quills, which are blackish.

The Egyptian Fox Goose, *Chenalopex ægyptiaca*, the type of the genus *Chenalopex*, has been included in the European list; but as it is essentially an African bird and unlikely to have straggled within our limits in a wild state, and as, moreover, these Geese are frequently kept in a half-tame state on ornamental waters, it appears to me unadvisable to include it.



SNOW GOOSE.
CHEN HYPERBOREUS.

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CASSIN'S SNOW GOOSE.
CHEN ALBATUS.

CHEN ALBATUS.

(CASSIN'S SNOW-GOOSE.)

Anser albatus, Cassin, Proc. Philad. Acad. 1856, p. 41.
Chen albatus, Elliot, B. of N. Am. ii. no. 58 (1869).
Anser hyperboreus auctt.

Figura unica.

Elliot, Birds of N. Am. pl. 42 (*ad.*).

Ad. Cheni hyperboreo similis, sed minor.

Juv. suprà brunnescenti-griseus: fronte et facie albicantibus: remigibus nigris, scapis albis ad apicem brunneis, secundariis vix albido marginatis: tectricibus alarum scapularibusque griseis, conspicuè albo marginatis: uropygio supracaudalibusque niveis: caudâ albâ, rectricibus centralibus medialiter vix griseo lavatis: subtùs albus: rostro nigricante, vix rufescente lavato: pedibus plumbescentibus: iride brunneâ.

Adult. Similar in plumage to *Chen hyperboreus*, but smaller in size. Total length 23·3 inches, culmen 2·12, wing 15·5, tail 4·7, tarsus 2·87.

Young (Wexford). Upper parts generally dull brownish grey; underparts white, washed with grey on the fore part of the breast and neck; crown and nape brownish grey; face white; feathers on the back and scapulars tipped and margined with whitish, the grey on the latter darker than on the former; quills black, lighter and washed with grey at the base, the shafts white, shading off into brown towards the tips; secondaries white at the base and margined and tipped with that colour; wing-coverts greyish, white at the base, and margined with white; rump and upper tail-coverts white; tail white, the central feathers marked with grey in the middle; bill nearly black, with a reddish tinge, especially on the lower mandible; tarsi and feet lead-colour, running into yellowish red, especially on the web close to the toes; iris brown.

Obs. Mr. Howard Saunders, who most carefully measured the five specimens examined, gives the general measurements as—wing 15 to 15·75 inches, tarsus 2·87, culmen 2 to 2·12; whereas in *Chen hyperboreus* they vary as follows—wing 17 to 18·5 inches, tarsus 3 to 3·25, and culmen 2·38 to 2·50. The female differs from the male merely in being a trifle smaller.

This Goose, differing principally, if not only, in size from *Chen hyperboreus*, is one of the rarest species known. Cassin, who first described it as a distinct species in 1856, had seen but five specimens. He gives the habitat as "Western and Northern America, Oregon, rare on the Atlantic. A single specimen from Oregon is in the collection of the Exploring Expedition in the 'Vincennes' and 'Peacock;' and four specimens, which occurred in pairs, have come under my notice in the market in Philadelphia in the course of twenty years. These five specimens are all that I have seen of this species; and it is very probably of rare occurrence on the coast of the

Atlantic. The four specimens alluded to, which are a pair of adults and a pair of young, are now in the collection of the Philadelphia Academy." In the Hepburn collection at Cambridge are three specimens of this Goose from North-west America, sent as *Chen hyperboreus*, but which, when sent up to London for examination by Mr. Howard Saunders (on which occasion I also had the opportunity of examining them), proved to be the present species.

Two examples having been obtained in Ireland in November 1871, enable me to include this Goose in the present work. Mr. Howard Saunders, who chronicled this occurrence, and exhibited the two specimens (one of which is in his, and the other in my collection) at a meeting of the Zoological Society in 1872, writes as follows:—"On the 9th of November last my attention was called to two Geese in Leadenhall Market; and subsequently I purchased them, one for Mr. R. B. Sharpe, and the other for myself. They had both been recently shot, the blood and slime being still moist in the wounds, bill, and nostrils. The vendor, with whom I have dealt for some years, did not pretend to know any thing about the locality where they were obtained, but referred me to the wholesale dealer from whom he had purchased them. This dealer, Mr. Miller, at once showed me the invoice, specifying so many head of poultry and 'two birds,' forwarded to him three days previously by a poultry-dealer named Ellen Neill, of the Faythe, Wexford, Ireland. The Faythe is a suburb where the wild-fowl shooters reside; and as it was certain that the birds had not been frozen, or sent over in ice, there seemed to be no reason to doubt that they had really been killed in that district. Of course I at once wrote for particulars, but failed to elicit any direct reply. I subsequently gave the necessary details to Sir Victor Brooke, who kindly took a great interest in the matter, and, on the occasion of my reading this paper, has put into my hand a letter just received; and I am thus enabled to quote in its proper place this most valuable corroborative evidence:—

"'Wexford, March 14th, 1872.

"'I have succeeded in tracing the Geese referred to. They were shot by a boy on the lake of Tacumshane, on the south coast of this county, and were the only ones which appeared there; but there was a third one subsequently shot in Wexford harbour. So far as I have been able to learn, no others like them have been seen here; but I shall try and find out more about this. They had been swimming about on the lake (or lough) for some days before they were shot; and the lake adjoins the sea, from which it is only separated by a narrow ridge of sand, and it would probably be one of the first places birds would make if coming from seaward. I am sorry for the delay in replying to your letters; but it was only to-day I was able to do so, as Mrs. Neill is only a poultry-dealer, and not particular in inquiring where the birds she buys come from.

"'Yours, &c. (Signed) Sim Little.'

"The stomachs of these birds contained nothing but a little grit, some of which I have preserved. On dissection they proved to be male and female, and from their plumage are evidently birds of the year. The sternum of each, and the trachea of the female, have been carefully preserved, the trachea of the male having been shattered by shot. . . . . We supposed, at the time, that these were *Anser hyperboreus*, Pallas, of which the occurrence in Europe has already been recorded; but on comparing them with specimens in the British Museum, they appeared to be nearly as much too small for that species as they were too large for *A. rossii*, Baird. Besides, the latter is still further distinguished by the caruncles at the base of the bill, which have induced Mr. D. G. Elliot to give it the new generic name of *Exanthemops*. Mr. Elliot having enjoyed the advantage of examining the type specimen of *Anser albatus*, Cassin, which he has figured in

his 'Birds of North America,' vol. ii. p. 42, his suggestion that these birds might prove to be young of that species carried with it great weight; and subsequent careful and detailed examination and comparison with specimens kindly lent me by Professor Newton, out of the Hepburn Collection, Cambridge University Museum, have convinced me not only that these two birds are *A. albatus*, but that three of those from the Hepburn collection also belong to that species, and not to *A. hyperboreus*. . . . .

"Since Cassin first considered that there was sufficient difference in these dimensions to warrant a specific distinction, evidence strongly confirming his views has been received from Mr. Bernard H. Ross (Nat. Hist. Rev. 1862, p. 286), who writes as follows:—'There can be little doubt of the existence of three species of Snow-Geese (exclusive of the Blue Wavey of Hudson's Bay), as the Slave-Lake Indians have a different name for each kind. The first which arrives is the middle-sized species, which I believe to be the *A. albatus*; next comes the smallest sort, the *A. rossii*; and lastly the *A. hyperboreus*, which arrives when the trees are in leaf, and is called the Yellow Wavey by the Indians.' It may be objected that savages and uneducated people generally (though the failing is not confined to that class) are great species-makers. To this I would reply that, in the present case, the Indians are clearly right about two out of the three species, and the odds are therefore two to one in favour of their being correct as to the third.

"The very fact of these birds having visited the milder climate of the shore washed by the Gulf-stream, is an additional evidence of its distinctness as a species. Cassin lays especial stress upon the fact of its habitat being confined to the extreme north-western portion of the American continent; and we know that on that coast the winter set in last year so early, and with such unexampled severity, that of the thirty or forty whalers which frequent Behring's Straits, only three managed to escape from the ice, while, on the other hand, I am not aware that the more central and eastern portions have experienced a winter of any unusual rigour."

The specimen figured is in immature plumage, and is the one killed at Wexford, now in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *juv.* Near Wexford, November 1861.

E Mus. Howard Saunders.

a, ♀ *juv.* Near Wexford, November 1861.

E Mus. Cantab.

a, ♀ *juv.* Twelve-mile House, California (*Hepburn*). *b*, *c*, ♂. Victoria, Vancouver's Island, January 18th, 1868 (*Hepburn*).

CHEN HYPERBOREUS.

(SNOW-GOOSE.)

Anser niveus, Briss. Orn. vi. p. 288 (1760).
Anser hyperboreus, Pall. Spicil. Zool. i. pt. 6, p. 25 (1769).
Anas nivalis, Forst. Phil. Trans. lxii. p. 413 (1772).
Anas hyperborea, Gmel. Syst. Nat. i. p. 504 (1788).
Chen hyperborea, Boie, Isis, ii. p. 563 (1822).
Tadorna nivea, (Briss.) C. L. Brehm, Vög. Deutschlands, p. 854 (1831).
Chenalopex hyperboreus, Brehm, Naumannia, 1855, p. 297.

Figuræ notabiles.

Gould, B. of E. pl. 346; Wils. Am. Orn. viii. pl. 68. fig. 5; Aud. B. of Am. pl. 381. fig. 1.

Ad. niveus: primariis nigris, ad basin cinereis, scapis albis versùs apicem brunneis: secundariis albis, externis vix brunneo notatis: alulâ spuriâ cinereâ: rostro pedibusque rubris: iride brunneâ.

Adult. Pure white, excepting on the wings; primaries black, excepting at the base, where they are dark ashy grey; shafts of the primaries white, merging into brown towards the tip; secondaries white, the outermost marked with brown; spurious wing ashy grey; legs red; beak red, tooth of the bill white; iris brown. Total length 33 inches, culmen 2·50, wing 17, tail 6, tarsus 3.

Young. Similar in plumage to the immature of *Chen albatus*.

The Snow-Goose is more especially an inhabitant of the Northern Nearctic Region, but is also found in Europe, tolerably regularly, it appears, in the eastern portion of European Russia; and it likewise occurs in Asia, where, as recorded by Temminck and Schlegel, it has been met with in Japan.

It has not been observed in Great Britain; but Professor Reinhardt includes it in his list of the birds of Greenland, and it is possible that some day we may find a straggler or two so far out of its regular route as on our coasts. It is true that Degland and Gerbe refer to a specimen received from London by M. Oursel, of Havre; but a careful examination of the specimen led to the opinion that it had been mounted from a dried skin, and there appears to have been no history with it as to the particulars of its capture. Nor has it occurred in Scandinavia; but Von Heuglin thinks it may probably be found on Novaja Zemlia.

It is found tolerably regularly in Russia. Mr. Sabanäeff writes to me that it has been met with in the Government of Jaroslaf, though not in that of Moscow, and therefore probably passes along the Volga. The sportsmen in the Ural state that it is to be found in the Kaslinsk Ural during migration; and Pallas records it from Cheliaba. There is no doubt about its occurrence in Germany on several occasions. According to Naumann, Silesia* is the country

* "*Anser grandinis*, Schwenkfeld, ex Silesia."

where it has most often been met with, and considerable flocks have been known to pass there. He gives two instances of single individuals having been seen in Anhalt, and two in Greifswald, and considers that these occurrences may be relied on. Bechstein saw a large flock on the 13th of January, 1792, passing over the Thüringerwald; and one out of this flock was shot. Degland and Gerbe write that an immature bird was killed near Arles in the winter of 1829, and sent to M. Crespon, of Nismes, this being the only record of its occurrence in France. Von der Mühle states that it occurs in Greece; and Lindermayer writes that he has seen white Geese in the Gulf of Atalanti, but did not succeed in shooting one.

As before stated, the continent of North America is the true home of this Goose; but it is also found on the Atlantic islands. In Cuba, Dr. Degland writes, it is "common from October to April. In October 1845 two came to a pond on which some tame Geese were swimming, and were easily shot. When the Cienega de Zapata begins to dry up, the dried-up portions are covered with Snow-Geese, of which I have killed at least thirty in one season." Albrecht records it from Jamaica; and it has also occurred on the Bermudas. Mr. Hodgson Smith shot two young birds on the 19th of October, 1848, in Riddle's Bay; and again in October 1849 two others were shot. Dr. Elliot Coues gives its range as "North America, U. S.;" in winter extremely abundant in the west, much less so in the east; and Audubon writes that "the geographical range of the Snow-Goose is very extensive. It has been observed in numerous flocks, travelling northward, by the members of the recent overland expeditions. On the other hand, I have found it in Texas; and it is very abundant on the Columbia river, together with Hutchins's Goose. In the latter part of autumn, and during winter, I have met with it in every part of the United States that I have visited.

"While residing at Henderson, on the Ohio, I never failed to watch the arrival of this and other species in the ponds of the neighbourhood, and generally found the young Snow-Geese to make their appearance in the beginning of October, and the adult or white birds about a fortnight later. In like manner, when migrating northward, although the young and the adult birds set out at the same time, they travel in separate flocks, and, according to Captain Sir George Back, continue to do so even when proceeding to the higher latitudes of our continent. It is not less curious that, during the whole of the winter, these Geese remain equally divided, even if found in the same localities; and although young and old are often seen to repose on the same sand-bar, the flocks keep at as great a distance as possible. The Snow-Goose in the grey state of its plumage is very abundant in winter about the mouths of the Mississippi, as well as on all the muddy and grassy shores of the bays and inlets of the Gulf of Mexico, as far as Texas, and probably still further to the south-west. During the rainy season it betakes itself to the large prairies of Attacapas and Oppellousas; and there young and adult procure their food together, along with several species of Ducks, Herons, and Cranes, feeding, like the latter, on the roots of plants, and nibbling the grasses sideways, in the manner of the Common Tame Goose. In Louisiana I have not unfrequently seen the adult birds feeding in wheat-fields, when they pluck up the plants entire. When the young Snow-Geese first arrive in Kentucky, about Henderson for instance, they are unsuspicious, and therefore easily procured. In a half-dry, half-wet pond running across a large tract of land on the other side of the river, in the State of Indiana, and which was once my property, I was in the habit of shooting six or seven a day.

This, however, rendered the rest so wild, that the cunning of any 'Red Skin' might have been exercised without success upon them; and I was sorry to find that they had the power of communicating their sense of danger to the other flocks which arrived. On varying my operations, however, and persevering for some time, I found that even the wildest of them now and then suffered; for having taken it into my head to catch them in large traps, I tried this method, and several were procured before the rest had learned to seize the tempting bait in a judicious manner.

"The Snow-Goose affords good eating when young and fat; but the old Ganders are tough and stringy. Those that are procured along the sea-shores, as they feed on shell-fish, fry, and marine plants, have a rank taste, which, however suited to the palate of the epicure, I never could relish.

"The flight of this species is strong and steady; and its migrations over the United States are performed at a considerable elevation, by regular flappings of the wings, and a disposition into lines similar to that of other Geese. It walks well, and with rather elevated steps; but on land its appearance is not so graceful as that of our Common Canadian Goose. Whilst with us they are much more silent than any other of our species, rarely emitting any cries, unless when pursued on being wounded. They swim buoyantly, and, when pressed, with speed. When attacked by the White-headed Eagle, or any other rapacious bird, they dive well for a short space. At the least appearance of danger, when they are on land, they at once come close together, shake their heads and necks, move off in a contrary direction, very soon take to wing, and fly to a considerable distance, but often return after a time.

"Dr. Richardson informs us that this species 'breeds in the barren grounds of Arctic America in great numbers. The eggs, of a yellowish-white colour, and regularly ovate form, are a little larger than those of the Eider Duck, their length being three inches, and their greatest breadth two. The young fly in August, and by the middle of September all have departed southward. The Snow-Goose feeds on rushes, insects, and in autumn on berries, particularly those of the *Empetrum nigrum*. When well fed it is a very excellent bird, far superior to the Canadian Goose in juiciness and flavour. It is said that the young do not attain the full plumage before their fourth year; and until that period they appear to keep in separate flocks. They are numerous at Albany Fort, in the southern part of Hudson's Bay, where the old birds are rarely seen; and, on the other hand, the old birds in their migrations visit York Factory in great abundance, but are seldom accompanied by the young. The Snow-Geese make their appearance in spring, a few days later than the Canada Goose, and pass in large flocks both through the interior and on the coast.'" I may here remark that the young birds referred to by Audubon were doubtless *Chen cærulescens*, Gmel., which, though by many naturalists considered to be the young of the present bird, is, I am inclined to believe, a good and distinct species.

The specimen figured is an adult female in the collection of Mr. Howard Saunders.

In the preparation of the above article I have examined the following specimens:—

E Mus. Howard Saunders.

a, ♀ *ad.* Canada.

E Mus. Cantab.

a, *b*, ♂. San Mateo, California, January (*Hepburn*).

Genus CYGNUS.

Anser apud Brisson, Orn. vi. p. 288 (1760).
Anas apud Linnæus, Syst. Nat. i. p. 194 (1766).
Cygnus, Bechstein, Gemeinn. Naturg. Deutschl. iii. p. 815 (1809).
Olor apud Wagler, Isis, 1832, p. 1234.

This genus is represented in the Palæarctic, Nearctic, and Neotropical Regions, the Palæarctic species ranging occasionally into the northern portions of the Ethiopian and Oriental Regions, and if *Cygnus atratus* is to be considered congeneric with our Swans, the genus is also represented in the Australian Region.

The Swans frequent both fresh and salt water, but are usually found near the shores of the ocean, and not far out at sea. They swim with great ease and grace, but are clumsy and heavy on shore. Their flight is strong, and tolerably swift; and when on passage they collect together in flocks. Their call-note is loud and trumpet-like, being usually uttered when they are on the wing. They feed on the soft portions of aquatic plants, which they obtain chiefly from under water, being able, on account of their long necks, to reach down and pluck them up; but they also eat insects, snails, worms, and frogs.

They place their nest, which is large and bulky, on a small island, or on a tussock in a morass, or in any suitable place near the water, but always on the ground, and deposit up to six or seven greenish-grey or yellowish-white eggs.

Of almost all the white Swans the young birds are grey, becoming quite white in mature dress; and in several of the species the trachea enters the keel of the sternum, and returns before proceeding to the thorax.

Cygnus olor, the type of the genus, has the bill rather longer than the head, higher than broad at the base, depressed towards the end, of nearly equal breadth throughout, rounded at the end; unguis roundish, large, convex; edge of the bill straight, concealing the narrow blunt tips of the slender low lamellæ; nostrils elliptical, median, placed near the ridge; wings long, broad, the second and third quills longest; tail short, rounded; legs short, stout, placed rather far back; tarsus compressed, reticulated; hind toe small, elevated; anterior toes longer than the tarsus, the outer two about equal in length; interdigital membranes full; claws strong, arched, rather obtuse; plumage moderately full, close.



J.G.Keulemans lith.

Hanhart imp

MUTE SWAN.
CYGNUS OLOR.



1. POLISH SWAN. (Adult) 2. (Young)
3. BEWICKS SWAN.
4. WHOOPER SWAN.
5. MUTE SWAN. (Adult) 6. (Young)

CYGNUS OLOR.

(MUTE SWAN.)

Anser cygnus, Briss. Orn. vi. p. 288 (1760).
Anas cygnus, β *mansuetus*, Linn. Syst. Nat. i. p. 194 (1766).
Anas (*Cygnus*) *mansuetus*, Lath. Gen. Synopsis, Suppl. p. 297 (1787).
Anas olor, Gmel. Syst. Nat. i. p. 501 (1788).
Cygnus gibbus, Bechst. Gemeinn. Naturg. Deutschl. iii. p. 815 (1809).
Cygnus sibilus, Pall. Zoogr. Rosso-As. ii. p. 215 (1811).
Cygnus olor (Gm.), Vieill. Nouv. Dict. ix. p. 37 (1817).
Cygnus mansuetus, Flem. Brit. Anim. p. 126 (1828).
Cygnus unwini, A. O. Hume, Ibis, 1871, p. 413.

Cygne domestique, French; *Cigno reale*, Italian; *Schahin Aquaq*, *Ardef*, Arabic; *Höker-Schwan*, *stummer Schwan*, German; *de Zwaan*, Dutch; *Knubsvane*, Danish; *Tam Svan*, Swedish; *Lebed-chipounn*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 913; Werner, Atlas, *Palmipèdes*, pl. 36; Kjærb. Orn. Dan. taf. 44; Frisch, Vög. Deutschl. taf. 152; Fritsch, Vög. Eur. taf. 46. fig. 2; Naumann, Vög. Deutschl. taf. 295; Sundevall, Svensk. Fogl. pl. 56. fig. 1; Gould, B. of Eur. pl. 354; id. B. of G. Brit. v. pl. 8; Schlegel, Vog. Nederl. pls. 288, 289.

♂ *ad.* albus, fronte juxta basin rostri gibbo magno rotundo instructâ: rostro rufescenti-luteo, marginibus maxillarum, narium orificio, ungue, cerâ et gibbo frontali nigris: iride fuscâ: pedibus nigris.

♀ *ad.* minor, gibbo minore, collo graciliore.

Juv. sordidè fusco-cinereus nec albus, rostro plumbescenti colorato nec rufescenti-luteo.

Adult Male. Entire plumage pure white; beak orange-red, except the base of the mandible, the edges of same, the nail, the orifice of the nostrils, and the large tubercle at the base of the bill, which are black; legs and feet also black; the head and neck are frequently tinged with ferruginous; but this coloration is probably caused by contact with ferruginous-tinged water; iris brown. Total length about four and a half to five feet, gape 3·65 inches, wing 27·0, tail 10·0, tarsus 4·5.

Adult Female. Resembles the male, but is somewhat smaller in size, and the tubercle at the base of the bill is smaller.

Young birds are, after the down plumage, sooty brownish grey; and this plumage is gradually changed for the white dress, which is assumed when they are about two years old. In the first autumn the cygnet has the beak deep lead-colour, the nostrils, nail, and the marginal line of the upper mandible being

black; as it assumes the white dress a lighter grey tinged with green replaces the lead-colour, and before the close of the second year these dark tints have given place to a pinkish flesh-colour, which in the following spring darkens into orange-red.

Young in down. Covered with soft brownish or dull ashy grey down, which on the lower throat and breast becomes much paler, almost white in colour; bill and legs lead-grey.

This, the common domestic Swan, is not only very generally kept in a tame or semidomesticated state throughout Europe, but in some parts of Northern and Eastern Europe it is tolerably numerous in a perfectly wild condition. With us in Great Britain it is not met with in a true feral state, and those which are found straggling about on our coasts are examples which have strayed away from some one of the swanneries where these birds breed in a state of semidomestication. There are in several parts of England large swanneries, as, for instance, that at Abbotsbury; but, besides these, a few pairs breed together in many of our larger rivers or sheets of water. According to Yarrell the Mute or common Swan was introduced into England from Cyprus in the reign of Richard I., who began his reign in 1189; but it is very probable that it was brought to our country prior to that period, possibly by the Romans, who naturalized both the Pheasant and the Fallow Deer on this island; so that it has clearly earned as good a right as the Pheasant to be included as a British species.

Though very generally distributed throughout England, it becomes rarer in the north, and is not included as a Scotch bird by Mr. Robert Gray. It is frequently kept in captivity in Ireland, as it is in England; but it is not known to have been found there in a wild state.

Our Mute Swan does not occur in Northern Scandinavia, except as a very rare straggler, and has only lately been included as a Norwegian species by Mr. Robert Collett, who states (Orn. N. Norw. p. 89) that "two young birds of this species, neither of which had attained the adult plumage, were killed in the south of the country, both in winter. One was shot on the ice, at the inland extremity of the Christianiafjord, on the 31st December 1869, and is now preserved in the University Museum; the other was killed near Twedestrand, in December 1870, and transmitted to the Museum by Mr. Aall, proprietor of the Næs Ironworks."

In Sweden it is said to be met with only in the southern provinces. Formerly it used to be much more numerous in Skåne than it now is, as so many of its old haunts have been drained and brought under cultivation. It nests, however, on many of the lakes of that province, and is often seen on the coasts in large flocks after the nesting-season; and though many migrate southward at the approach of winter, not a few remain there even during severe weather. It has not been met with in Finland, except in a tame state; nor does it appear to range far north in Russia. According to Sabanäeff it occurs on the spring passage in the Jaroslaf Government, and Meshanoff met with it in the south-western portions of the Vologda Government. It nests in the southern portions of the Ural; and Artzibascheff says that it is common on the lakes of the Sarpa, where it breeds; he saw large numbers also on the Khana and Tzaga-nour lakes.

It is said to be only an accidental straggler to Poland; but it occurs with tolerable regularity on some of the larger lakes in Northern Germany, and half-wild examples are to be met with near Potsdam. Borggreve says that it nests on the Aalbecker lake in Pomerania, and the Neustettiner lake in Prussia, but that, as a migrant, it is much less numerous on the coasts than

the Whooper Swan. According to Von Homeyer (J. f. O. 1872, p. 307), about eight pairs used formerly to breed on the Putzar lake, near Andam, and when the cold season commenced the young were caught and kept in confinement; but, though protected, they have become fewer in number of late years.

According to Collin it is not only kept in a state of semidomestication in many parts of Denmark, but it breeds, or used not long ago to breed, in several localities, as, for instance, on the Lyngby, Gjentofte, and Damhus lakes at Strandmöllen. In Faber's time it nested on the Nöröxe lake, north of the Limfjord; Boie says that numbers bred on the Kloster lake; and Mr. Collin himself found a nest containing five eggs on the Fure lake. Out of the breeding-season it is found on the coasts, but in smaller numbers than the Whooper.

In Holland, Belgium, and France it is not only kept in a state of semidomestication, but wild birds are said to occur on passage, apparently more frequently in the south of France than elsewhere. Colonel Irby does not include it as found on the Spanish side of the Straits of Gibraltar, though Mr. Saunders says (Ibis, 1871, p. 396) that he saw a specimen in the Valencia Museum. In Italy, though much rarer than *Cygnus musicus*, it has from time to time been obtained in most of the northern and central provinces; and it is recorded by Cara as a visitant to Sardinia and Sicily, where in 1845 large numbers frequented the lakes near Lentini. It has also been obtained at Malta; for Mr. C. A. Wright states (Ibis, 1869, p. 250) that he obtained the head of one killed at Salini on the 21st December 1868. In Southern Germany the Mute Swan is, comparatively speaking, rarely met with in a wild state, but is very frequently kept tame on ornamental water. Dr. Anton Fritsch records only two instances of wild birds having been obtained in Bohemia, viz. one killed in the autumn near Benátek, and one shot in March 1872 near Kourim. On the Danube, however, it is by no means uncommon, being much more numerous on the Lower than on the Upper Danube. Messrs. Danford and Harvie-Brown say (Ibis, 1875, p. 426) that small flocks are occasionally met with on the lakes and rivers of Transylvania, especially on the Alt and Maros. It has also been obtained on the Strell, at Russ, by Herr Buda Elek. I observed it on several occasions on the Lower Danube. Messrs. Sintenis state that it is resident and common in the Dobrudscha, being especially abundant in the winter; and Messrs. Elwes and Buckley write (Ibis, 1870, p. 338):—"The Mute Swan is found in a wild state in some parts of Turkey in summer and winter. The Gulf of Salonica was full of Swans when we arrived there; and the Governor, who is a great sportsman, invited us to join a battue, which was attended by several boats from the town. The procession was headed by three large men-of-war's boats, containing the chief dignitaries, with their rifles; and etiquette was carried to such an extent that, instead of advancing in line, they kept in the order of their precedence. The Swans, which might easily have been surrounded, naturally took advantage of this; and a great expenditure of ammunition at long ranges only resulted in the capture of two Swans, though there must have been a thousand in the flock. Whoopers, as well as Mute Swans, were among them; but we did not identify Bewick's Swan. Swans which we believe to be of this species (*Cygnus olor*) were breeding on the Upper Devna lake, near Varna; and a Wallachian shepherd brought us a nest of eight eggs, which he had taken on a lagoon near Rassova." It is also said by Dr. Krüper to be resident in Greece, where it nests on the Kopais and other lakes, but appears to be more numerous in winter than in summer. In the Black

Sea it is a winter visitant, remaining until February or March, when it migrates northwards; and it is found also, during the cold season, on the coast of Asia Minor; but Canon Tristram did not meet with it in Palestine. The Mute Swan is a regular winter visitant to North-east Africa, and is found in the lagoons of the Nile delta, especially on Lake Menzaleh, where Von Heuglin met with it early in October, in pairs or small flocks, and it occasionally remains, he says, as late as May; so that some may possibly breed there. Loche says that this Swan is tolerably common on the great lakes of Algeria; and according to Favier (*fide* Colonel Irby), it is numerous near Tangier, passing over in small flights, but rarely remaining in the vicinity, though it did so in 1845 and 1849. As a rule they pass south in December, returning in April. How far the Mute Swan ranges in Africa I cannot say; but it does not appear to pass far south in that continent, and has not been recorded below the northern districts.

In Asia it of rare eccurrence, except in the west. It is found on the Caspian. Severtzoff records it as breeding in Turkestan; and Mr. Scully, in his notes on the avifauna of Eastern Turkestan (Stray Feathers, iv. p. 197), writes:—"The Swan was often mentioned to me as being plentiful in Lob and towards Aksu; captive individuals of this species were seen at Káshghar in November, swimming in a pond at the shrine of Hazrat Apak. The Turki name for the species is *Koday*." It is not included by Dr. Jerdon as occurring in India; but two young birds were obtained by Captain Unwin, on the 17th January 1871, at the Jubbee stream, on the borders of the Hazara and Rawulpindee districts, and sent to Mr. A. O. Hume, which, from the description given by this latter gentleman, could be nothing but immature examples of *Cygnus olor*. Mr. Hume remarks that Swans appear to be regular annual visitants to the above locality as well as several other places lying between Rawulpindee and the western limits of the Peshawur valley.

The Mute Swan has been recorded from as far east as South-east Siberia; for Dr. Radde says that he saw a pair in May 1856 at Kulussutajeffsk, and distinctly recognized them by the knob at the base of the bill, though he did not succeed in procuring either of them.

The Mute or common Swan is certainly one of the most elegant of our European water-birds; hence it is so frequently kept on ponds, rivers, and ornamental sheets of water in a domesticated or semidomesticated state; and, indeed, there can be no more beautiful ornament on a lake than this graceful bird. When kept where it comes into continual contact with man, and especially where food is often thrown to it, the Swan becomes very tame and familiar; but when wild it is extremely cautious and shy, and is as difficult of approach as any of the wild Geese. This is very apparent in localities where wild Swans are seen on passage; for they resort to places where they can command an uninterrupted view of the surrounding neighbourhood, and on the least appearance of danger they seek safety in flight. As a rule the Mute Swan affects inland sheets of water, and resorts to the open sea only when subjected to persecution, or when moulting and unable to fly. When on the sea it resorts to quiet bays, the mouths of rivers, and places where the sea is not rough, being but seldom met with far from the coast. Its favourite places of resort are large sheets of water where the shores are well covered with aquatic plants, sedge, rushes, &c., or rivers where the current is not swift; but it prefers places where the reeds are neither too high nor so close that it cannot swim with ease amongst them.

Though the Swan swims with such ease, it is quite as awkward and clumsy on land as it is

graceful when sailing on the water; and it appears to take to the land most unwillingly, and only remains there for a short time, though both old and young birds select sometimes a place close to the edge of the water, where they tread down the reeds and use it as a regular resting-place. When sailing peacefully on the bosom of a lake or a sheet of ornamental water, with the scapulars and inner wing-feathers erected and its neck gracefully arched, there is no more graceful bird than the Mute Swan; and one can well understand why it has for so long been ranked as a royal bird, which it is in England, where no subject can have or hold it when at large in a public river or creek unless by grant from the crown; and in granting this privilege the crown also grants a swan-mark, which consists of a letter or some device cut in the skin on the upper mandible of the bird. So far as I can ascertain, this mode of marking the Swans on the beak is in vogue only in Great Britain, whereas on the Continent Swans are either marked by punching the web of a foot, or else by affixing a metal ring around the neck of the bird. With us, however, the privileges connected with the ownership of Swans and the right of having a swan-mark are so important, and have been held in such great estimation, that they form a most important part of the history of this bird, as far as England is concerned. Yarrell (Hist. Brit. B. iii. pp. 216–229) and Stevenson, in an article on the Mute Swan written for his 'Birds of Norfolk,' have, however, gone so very fully into this matter that I need only refer very shortly to it. According to Yarrell it was first enacted in the reign of Edward IV. (in the year 1482) that "no person whatever, except the King's son, should have any swan-mark or game of Swans of his own, or any other to his use, except he hath freehold lands and tenements to the clear yearly value of five marks;" but there is no doubt that swan-marks were used much earlier than that period, as the preamble to this statute states that the law was passed to prevent the robbery of Cygnets by unprincipled people who used to place their own marks on them to avoid detection. In 1496 it was ordered that the stealing or taking of a Swan's egg should be punished by a year's imprisonment and a fine at the King's will, and stealing, snaring, or driving Swans was punishable still more severely; and since then several more acts appear to have been passed to regulate the marking of Swans and the registry of swan-marks, of owners of Swans, and also of their swanherds. Previous to the dissolution of monasteries in England most of the swan-marks appear to have been granted to the various religious houses; and when their lands were either taken over by the crown or granted to corporate bodies or others, the swan rights followed with other privileges attached to the soil. The Swans on the Thames belong to Her Majesty and two of the city companies—the Dyers' and the Vintners' Company, whose marks are given by Yarrell, who states that in 1841 the total number of Swans belonging to these amounted to 437 old and young birds. The city of Oxford has also the right to keep Swans on the Thames, but does not exercise it; and Eton College owns the same privilege. The catching and marking of Cygnets and the renewing of marks in old birds that may have become obliterated is termed "swan-upping;" the male Swan is called a "Cob," the female a "Pen;" the young bird in its first year is termed a "Cygnet," and in its second year a "Grey bird." When the periodical "upping" takes place the young birds are not only nicked or marked on the bill, but they are also pinioned to prevent them from flying away, as they probably would do were they not thus disabled. For an excellent account of swan-upping I may refer to Mr. Stevenson's exhaustive article on the

Mute Swan above cited. Although so graceful and sedate-looking, the Swan is by no means an inoffensive bird, especially during the breeding-season, when the male bird will not only furiously attack any intruder of his own species who may venture to trespass on his watery domain, but will occasionally try and stop the way against boats that may pass too close to the nest; and any one who is curious enough to try and examine the nest itself is almost certain to encounter a warm reception. When pairing, severe battles take place between the young birds who have to choose mates; for the old birds are already paired, as the Swan pairs for life and lives in strict monogamy. The old birds have also some little trouble in driving intruders away from their nesting-places, which they do most effectually, fighting with the greatest fury.

The place selected for the nest is either on a small island or close to the edge of the water on the mainland, and consists of a great mass of aquatic herbage heaped together, the interior being constructed of rather finer materials than the rest of the nest, which is usually very bulky, and raised so as to prevent any accident from floods. Yarrell gives a remarkable instance of the power of instinct in a Swan, communicated to him by Lord Braybrooke. A female Swan which was sitting on four or five eggs at Bishops Stortford was observed to be busy trying to raise her nest, and on half a load of haulm being thrown down near the nest she made use of it to raise her nest and eggs two feet and a half. That very night there came a heavy fall of rain, which caused a flood and did considerable damage: but the Swan had taken sufficient precaution; for her eggs were above, though only just above, the water.

Incubation lasts about five weeks, or rather longer if the weather is cold; and during the time the female is sitting the male is particularly attentive to her, and extremely jealous of any intrusion near the nest. Although as a rule the female alone incubates, the male is said to take her place should any accident happen to her, and will hatch out and rear the young birds. One brood is usually raised in the year; but if the first eggs are destroyed the female will generally deposit a second lot. It may not be out of place here to cite some remarks on the nidification of the Mute Swan published (*l. c.*) by Mr. Stevenson:—"The Swan's nest, from its ample dimensions, is always a conspicuous object, whether placed amongst the rank herbage on the river's bank, at the mouth of a marsh-drain, or on the little islands and reedy margins of the broads themselves; and from the summit of that littered mass the sitting bird commands all approaches, whilst her mate keeps guard below. To my mind an old male Swan seldom looks more beautiful than when, 'on duty,' he sails forth from the margin of the stream to meet intruders; with his head and neck thrown back between his snowy pinions, and every feather quivering with excitement, he drives through the rippling water, contenting himself, if unmolested, with a quiet assertion of his rights, but with loud hisses and threatening actions resenting an attack. When the young, too, under the joint convoy of their parents, have taken to the water, the actions of both birds are full of grace and vigour, and the deep call-notes of the old pair mingle with the soft whistlings of their downy nestlings. What prettier sight presents itself upon our inland waters with such a group disporting themselves in the bright sunshine of a summer's day, when the pure whiteness of the old birds' feathers contrasts with the green back-ground of reeds and rushes, and the little grey Cygnets on their mother's back are peeping with bright bead-like eyes from the shelter of her spotless plumes? This habit of taking the young on her back is not, as some have supposed, adopted only as a means of safety when crossing a strong current,

but is a method of brooding her young on the water, very commonly practised by the female Swan whilst her Cygnets are small; and she will sink herself low in the water that they may mount more easily. Whether at the same time she gives them a 'leg up' by raising them on the broad webs of her own feet I cannot say positively; but this is not improbable, since a favourite action in Swans is that of swimming with one foot resting upon the lower part of the back, the sole of the foot being uppermost. With reference also to this means of transporting the young from one spot to another, a curious fact has recently come to my knowledge, which marks as well the attachment of these birds to their accustomed nesting-places. An old hen Swan, one of Dick's protégées, which in autumn and winter frequents the Yare, between Thorpe and Whitlingham, regularly as the spring comes round makes her appearance, with her mate, on Surlingham Broad, a distance (allowing for the windings of the stream) of nearly six miles, and proceeds at once to collect materials for her nest in that locality. Shortly, however, after the young are hatched this same pair, the female with her little progeny on her back, may be seen passing from the broad into the river, where, turning their heads up stream with an evidently settled purpose in view, they commence the return journey to Thorpe; and from observations made by ferry-keepers and others, to whom this habit is known, it is believed the whole route is accomplished without stopping to feed by the way. Two other pairs that regularly nest on the same broad return with their young during the summer to their winter quarters at Bramerton, some three miles up the river; and on one occasion a female which had been conveyed to Surlingham in the spring, and paired on the broad, returned with her Cygnets to a spot near the 'Clarence Harbour Inn,' at Carrow, distant about seven miles, where she had by chance been turned off in the previous winter.

"Swans pair for life, build a fresh nest each season, and, if left unmolested, will keep pretty close to the same locality. Adult birds invariably nest earlier than young, owing chiefly, no doubt, to the advantage which an old cock Swan possesses over a young one of maintaining his right to any selected spot, whilst a young couple just 'setting up' for themselves have many drawbacks to encounter. 'Might is right' in such matters; and many battles have to be fought to secure a *locus standi*; and occasionally young couples will select unfavourable sites, from which the marshmen, well knowing their eggs would be stolen, drive them off as soon as they commence building. A young male, though paired with an old female, would have an equal difficulty in holding his ground. Young hen birds do not lay till their second year, some not until the third or fourth, and commence by laying three to five eggs. A second-year bird paired with a male of her own age usually lays three eggs the first season, but will probably commence with five, if paired with an old male. Commencing with five eggs, the same bird will lay from seven to nine the next season, and in the following year from ten to eleven, being then in her prime, at four years old. Hen birds which have not paired till their third or fourth year will lay from seven to nine in their first season; but from Dick's observations it would seem that a second-year female, commencing with only three eggs, rarely, if ever, lays more than nine. I have no reason to question the accuracy of these statistics (though necessarily beyond my own cognizance), my informant having been accustomed for years, in company with the recognized swanherd, to examine the majority of the nests in his neighbourhood whilst the birds are laying, carefully noticing the number of the eggs in each, the owner's marks on the birds, and their respective

ages; and his statements may, I think, in some degree account for the strange discrepancy in the works of British ornithologists as to the number of eggs laid by the Mute Swan.

"The wide range afforded the Swans on the Yare, with the abundant supply of their natural diet, accounts to some extent, no doubt, for the very large number of Cygnets reared within our civic boundaries. On this point Mr. Dixon states that in one year, on that portion of the Yare next to his late residence at Cringleford, three pairs of Swans had each a brood of nine Cygnets, which he considered above the average; but he had even known seven reared on a very small moat. On the Yare, below Norwich, and on the adjacent broads, allowing for accidents and the difference in laying between young and old females, I believe seven to be about the average of young hatched, though many a proud mother there launches her little fleet of ten or even eleven Cygnets."

Mr. Benzon informs me that in Denmark, where this Swan breeds in a wild state, it almost always makes its nest in a place where it is quite surrounded by water, such as a small island in a lake or a large tussock rising out of the water near the shore. The nest is large, is frequently raised three feet above the surface of the water, and is from four to five feet wide. The eggs are deposited in May, and vary in number from five to eight. Eggs in Mr. Benzon's collection vary in size from 112 by 72 to 125 by 80 millimetres.

The food of the Swan consists almost entirely of the soft starchy portions of aquatic plants, of insects and insect-larvæ, snails, and worms, and also, it is said, of frogs; but it seldom catches fish; and though it has been accused of feeding on fish-spawn, there appears to be no direct proof of the justice of this allegation. Mr. Stevenson, however, in stating that he has no evidence by dissection that Swans do eat spawn of our river fish, adds that "the testimony of our broadmen is so far confirmatory of the watchers on the Thames that, whilst they acquit the old Swans of eating the spawn themselves, they assert that they pull up the weeds with spawn on for their young ones. Whether correct or not, however, on this point, it is undoubtedly in May and June (when the roach and bream enter the broads and dykes in shoals to deposit their spawn) that the marshmen invariably find both old and young Swans collected together in these shallow waters busily foraging amongst the herbage under the banks of the stream where spawn had been previously noticed." It is said that the Swan is of great service in keeping down the American weed *Anacharis alsinastrum*, which is such a pest in our rivers and canals; and Mr. Stevenson was informed by Rich that a pair of Swans which, at Surlingham, had strayed from the broad to a marsh-dyke near his house filled with this weed, cleared the channel very effectually in a short time.

In a domesticated state the Mute Swan is said to attain a great age. Naumann states that there are instances on record of Swans reaching the age of from 50 to 100 years; and in the 'Morning Post' of the 9th July 1840, there is an account of the death, from an accident, of a Swan on the waters of St. James's Park, which is said to have been hatched about the year 1770. Mr. Stevenson, however, says that, judging from the experience of the oldest swanherds living, or from the hearsay evidence of their predecessors, the Swan appears rarely to live longer than from thirty to forty years, and the oldest birds now on the Yare are not more than from ten to fourteen years old.

Strictly speaking, this Swan is certainly not mute (though compared with *Cygnus musicus*

it is a silent bird). When angry it utters a loud hiss of defiance; and when calling its young it makes a noise not unlike the bark of a small dog; and Naumann affirms that when in a wild state *Cygnus olor* occasionally utters a loud trumpet-like note resembling that of the Crane. This call is uttered in the spring, especially when the nest or the young are in danger, or when the male and female call and answer each other from a distance. So far as I can ascertain, this loud call is never uttered by the domesticated bird; and it is possible that its having so seldom been heard may have given rise to the fable so current amongst the ancients, to the effect that the Swan is gifted with the power of song when dying, and at no other period of its existence.

In my collection are eggs of the Mute Swan from the Söberg Mose, in Denmark, and Rasova, on the Danube, all of wild birds, which are greenish grey in colour, rather glossy in appearance, though somewhat rough in surface of shell; and in size they vary from $4\frac{1}{4}\frac{1}{0}$ by $3\frac{2}{4}\frac{}{0}$ to $4\frac{2}{4}\frac{2}{0}$ by 3 inches.

The specimen figured with the small Cygnets is an adult bird, the drawing having been made from a live bird in St. James's Park.

In the Plate of the heads of the various species of Swans, the heads of the adult and young birds of *Cygnus olor* are given for comparison with those of the Polish Swan.

In the preparation of the above article I have examined the following specimens, besides a considerable number of live birds.

E Mus. H. E. Dresser.

a, ♂ *ad.*, *b*, ♀ *ad.* Norfolk. *c*, *juv.* Salini, Malta, December 22nd, 1865 (*C. A. Wright*).

E Mus. H. Stevenson.

a, *b*, *ad.* Norwich.

E Mus. Brit. Reg.

a. England. *b*, *c*. Hayling Island. *d*. Severn.

CYGNUS IMMUTABILIS.

(POLISH SWAN.)

?*Anas dircæa*, Hermann, Obs. Zool. p. 139 (1804).
Cygnus immutabilis, Yarrell, Proc. Zool. Soc. 1838, p. 19.
Cygnus olor immutabilis, Schlegel, Rev. Crit. p. 112 (1844).

Figura unica.

Yarr. Brit. B. ed. 1, iii. p. 131.

Ad. albus: rostro rubro-aurantiaco: pedibus griseo-plumbeis: gibbo rostri minore quam in *Cygno olore.*

Juv. albus, dorso pallidè ochraceo-isabellino lavatus: rostro pallidè purpureo-incarnato, pedibus pallidè cinereo plumbescentibus.

Adult (Northrepps). Plumage, as in *Cygnus olor*, pure white; bill rather redder than in that species, and the berry is smaller; legs rather more of a plumbeous grey tinge. Total length about 5 feet, bill 3·6 inches, wing 23·5, tail 6·8, tarsus 4·25.

Young (Northrepps, 15th August). General colour white with a faint ochreous buff tinge on the back; bill pale purplish pink, not plumbeous as in *Cygnus olor*; legs greyish plumbeous.

Young in down (Northrepps). Covered with pure white silky down, without any trace of brownish grey.

The article on the present species of Swan has been deferred as late as possible in the hope that I might succeed in ascertaining something further respecting its true habitat; but I have not been able to do so, and it remains, as it hitherto has been, a mystery. Most of the continental authors have not separated the Polish or Changeless Swan from the Mute Swan; and it is therefore almost impossible to trace its presence on the Continent; but, so far as I can ascertain, it has only been recorded in a wild state from the shores of Great Britain. For a long time I was inclined to indorse the view taken by Mr. J. H. Gurney many years ago, that the true wild Mute Swan belongs to this species; but from the descriptions I have had of the young of wild *Cygnus olor*, this view does not appear to be a correct one. That the Polish Swan is specifically distinct from the Mute Swan there is, so far as I can see, no doubt; for in the young plumage, as well as in down, it is white, or white tinged but very slightly with pale buff; and besides this there are considerable differences in various parts of the head between the two birds, which enables one clearly to distinguish them. Mr. Pelerin, who made careful observations on these differences, writes (Mag. Nat. Hist. 1839, p. 178):—"The measurement of an adult cranium of each is as follows:—Length from the tip of the bill to the base of the occipital bone in *Cygnus immutabilis* six inches and three eighths; *Cygnus olor* six inches and seven eighths. Height, from the bottom of the lower mandible when closed, to the top of the protuberance at the base of the bill, in *C. immutabilis*, one inch and five eighths; *C. olor*, two inches. Height from the base of

the under jaw to the vertex of the head, just behind the orbit of the eye, in *C. immutabilis*, two inches and one eighth; *C. olor* two inches and a quarter. In *C. immutabilis* the bill is rather more flattened, particularly in the middle, between the *dertrum*, or nail, and the nostrils; the protuberance at the base of the upper mandible is less developed. In the Polish Swan the cranium is highest at the supraoccipital portion; in the Mute Swan the cranium is highest at the supraorbital portion; but the greatest difference is perceptible on comparing the occipital bones; the upper portion of this bone in *C. immutabilis* protrudes considerably more, and there are two oval *foramina*, one on each side, just above the *foramen magnum*, which are not present in any specimens of *C. olor* that I have examined; the portion forming the boundary of the external orifice of the ear is much more prominent; and the condyle forms a more acute angle with the basilar portion of the occipital bone."

There is no doubt that this Swan always differs from *Cygnus olor* in the young plumage in being entirely or nearly white instead of brownish grey; and though there are instances of broods being mixed, some of the cygnets being white and others brownish grey, it seems probable that these are the result of an alliance between a Mute and a Polish Swan. Besides the difference in the form of the cranium given by Mr. Pelerin, the adult *Cygnus immutabilis* has a smaller berry, a redder beak, a smaller eye, and smaller lamellæ than *Cygnus olor*, and the young bird is not only white instead of grey, but it has the beak pale purplish pink instead of plumbeous. I am indebted to Mr. Reeve, the well-known curator at the Norwich Museum, for a most interesting series of coloured sketches of the heads of this Swan at various ages, taken by him from living specimens in the possession of Mr. J. H. Gurney, to show the passage from the young to the fully adult plumage. From these I have selected one of the young and one of the old birds for my Plate. Mr. Gurney has kindly presented me with a specimen of the young Polish Swan which has just assumed the full feather plumage, but has still remains of the down amongst its feathers; and this bird is white very slightly tinged with warm buff on the back.

The Polish Swan, however, is not always so white in this state of plumage, as Mr. Southwell, in a paper read before the Norfolk and Norwich Naturalists' Society on the 26th September 1876, gives some interesting details respecting young birds which were tinged with buff, which I transcribe as follows:—"Since Mr. Stevenson's excellent monograph, which I have just read ('The Polish Swan,' printed for private circulation), was written, I have had several additional opportunities of examining Norfolk-killed specimens of the Polish Swan; and other important evidence has been accumulated, which tends greatly to strengthen my previous opinion, that the so-called *Cygnus immutabilis* is really a true species. The Polish Swan has actually been bred in confinement by Lord Lilford, producing white cygnets; and from these white cygnets his Lordship has again bred another generation of white cygnets. Lord Lilford does not appear to have recorded this; and it was only in the course of conversation that it came to light. Upon being applied to by Mr. Stevenson, however, his Lordship kindly wrote him full particulars of the occurrence, and at the same time expressed his decided opinion that the species is a good one. Before, however, this was known, the Council of the Zoological Society, finding that the pair in their possession mentioned by Mr. Stevenson did not breed in their confined home in the Gardens, determined to intrust them to Mr. J. H. Gurney, hoping that more liberty and a change of quarters might induce them to breed. In the spring of the present year they were accordingly

sent to Northrepps, where they at once settled, and in due time made a nest, and out of six eggs produced five young ones—three on the 21st, and two on the 22nd of May; these were a delicate buff-colour when hatched, which gradually faded to pure white. When I first saw them on June 2nd the buff tinge was hardly perceptible, except on the back, which appeared of a rich creamy buff, with the underparts nearly pure white. On the 16th of June the largest cygnet was killed by a rat and nearly destroyed; and on the 27th July, Mr. Gurney wrote me, that the cygnets were beginning to show some feathers, which were 'dull cinnamon-brown, much like the first down.' About the 10th of August the most backward and smallest cygnet died: it is the one I now exhibit, and agrees as to plumage with Mr. Gurney's description on the 27th July: you will perceive that the tail-feathers, which are now showing, are pale yellowish buff, and that the wing-coverts are the same colour; all the other parts from which the down has not yet been moulted are pure white. On the 20th of August I again saw the three cygnets; they had then assumed nearly all their feathers, and were more than half grown: the colour was white, apparently stained or sullied by a yellowish tint, which was strongest on the wing-coverts; feet pale ash-colour, and beak a purplish flesh-colour, differing entirely from the lead-colour of the bill in the young Mute Swan of the same age. The colour of the feet did not differ greatly from that of the young of the Mute Swan; and I agree with Mr. Stevenson, that at no stage of growth is this a character to be depended upon. When the breeze lifted the feathers upon the back of the young birds the buff tinge was more visible. There were also several peculiarities about the head, with which, although very important, I will not trouble you.

"I think it may be taken as proved that there is a Swan which produces white or nearly white cygnets. With regard to Professor Westerman's remarks to Mr. Gurney, that he had known a brood of mixed cygnets in Holland, and other instances recorded in the 'Field' for July 8th, 1871, in which a pair of Swans in Wales produced three white cygnets in a brood of the usual colour in one year, and a single one in another—the only instances of mixed broods I have ever heard of—I would say that I have very little doubt one of the parents in each case was a Polish bird, or that they were of mixed blood. From the fact of more than one Polish Swan killed in this neighbourhood having been partially pinioned, I am led to believe that, although others have been undoubtedly wild specimens, there are birds of this species at large on our waters unknown to their owners, and that various degrees of infusion of Polish blood may account for individuals which I have observed in several ornamental waters partaking more or less of the characters of both species. Mr. J. H. Gurney, jun., has told me of such birds on the Serpentine, and at Gatton Park; I have noticed others; and one on the lake in Battersea Park, so far as I had an opportunity of observing it, appeared to me to be almost a pure Polander.

"From what I have just said, mixed broods, or cygnets varying in colour, are just what we might expect; but so far from this being the case, I never could hear of any variation. Seventy cygnets now in the Swan-pit are as much alike as it is possible for them to be. Mr. Simpson who has had from seventy to a hundred through his hands yearly for the past thirty years, never saw a white cygnet. From this, I think, we may conclude that, if there is a mixture of blood, the dark colour inherited from the Olor parent is so strong in the cygnet as not to be appreciably affected by the Polish strain, but that the characters which distinguish the Polish breed assert

themselves at a later age." To these notes Mr. Southwell adds the following, viz.:—"March 12th, 1877. Mr. Gurney tells me the young Polish Swans are now pure white, with the exception of the crown of their heads, and that from one of the two survivors even this small display of colour has nearly disappeared."

Mr. Stevenson has published a very interesting account of the Polish Swan, which is above referred to by Mr. Southwell, and in which he cites the following occurrences in Norfolk, viz.:—one between Upwell and Downham in the winter of 1839; three near Lynn in December 1851; two, Horsey Mere, 2nd March 1855; one at Hickling in 1858; one, Homing, 20th January 1874 (?); and one on Hoveton Broad on the 14th November 1868. Some, at least, if not most of these, however, were undoubtedly birds which had straggled from other waters, and not genuine wild birds.

The Polish Swan has occurred on other parts of our coasts, as for instance at the mouth of the Thames, whence Yarrell obtained four; and there is a specimen in the British Museum shot at Nairn, N.B., on the 27th September 1872, by Viscount Holmesdale. Mr. Robert Gray does not know of any other occurrence in Scotland; but Yarrell says that "during the severe weather of January 1838 several flocks of these Polish Swans were seen pursuing a southern course along the line of our north-east coast, from Scotland to the mouth of the Thames, and several specimens were obtained." He further says that he has heard of one shot in Cambridgeshire, and of another shot in the winter of 1840–41. Mr. Stevenson believes that the so-called Cambridgeshire bird is in reality the one obtained in Norfolk in 1839.

As above stated, I cannot find any reliable information respecting the occurrence of this Swan on the Continent; nor is any thing known respecting its nidification, except in a state of semidomestication.

Deeming it unnecessary to figure the entire bird, I have given, on the same Plate with the heads of the other Swans, the heads of a young and an adult bird of this species.

Besides the examples alive in the possession of Mr. J. H. Gurney, I have, in the preparation of the above article, examined the following specimens:—

E Mus. H. E. Dresser.

a, juv. Northrepps, Norfolk, August 15th, 1879 (*J. H. Gurney*).

E Mus. Brit. Reg.

a. Nairn, N.B. (*Lord Holmesdale*).

E Mus. E. Bidwell.

a, pull. Northrepps.

CYGNUS MUSICUS.

(WHOOPER SWAN.)

Anser cygnus, Briss. Orn. vi. p. 288 (1760).
Anas cygnus, Linn. Syst. Nat. i. p. 194 (1766).
Cygnus musicus, Bechst. Gemeinn. Naturg. Vög. Deutschl. iii. p. 830 (1809).
Cygnus melanorhynchus, Meyer, Tasch. deutsch. Vogelk. ii. p. 498 (1810).
Cygnus olor, Pall. Zoogr. Rosso-As. ii. p. 211 (1811, nec Gmel.).
Cygnus ferus, Flem. Brit. Anim. p. 126 (1828).
Cygnus islandicus, C. L. Brehm, Vög. Deutschl. p. 832 (1831).
Olor musicus (Bechst.), Wagl. Isis, 1832, p. 1234.
Cygnus xanthorhinus, J. F. Naum. Naturg. Vög. Deutschl. xi. p. 478 (1842).

Hooper, *Whooper*, *Elk*, English; *Eala*, Gaelic; *Cygne sauvage*, French; *Cisne*, Spanish; *Zinna*, Maltese; *Wildschwan*, *gelbnasiger Schwan*, German; *de wilde Zwaan*, Dutch; *Sangsvane*, Danish; *Sveânur*, Færoese; *Kuksuk*, Greenlandic; *Svanur*, *Alft*, Icelandic; *Sangsvane*, Norwegian; *Sångsvan*, Swedish; *Joutsen*, Finnish; *Lebed-krikounn*, Russian.

Figuræ notabiles.

Werner, Atlas, *Palmipèdes*, pl. 35; Kjærb. Orn. Dan. taf. 44; Frisch, Vög. Deutschl. taf. 296; Fritsch, Vög. Eur. taf. 46. figs. 3, 4; Naumann, Vög. Deutschl. taf. 296; Sundevall, Svensk. Fogl. pl. 56. fig. 2; Gould, B. of Eur. pl. 355; Schlegel, Vog. Nederl. pls. 290, 291.

Ad. albus, rostri basi et loris flavis, rostri apice nigro, pedibus nigricantibus, iride fuscâ.

Juv. capite, collo et corpore suprà pallidè cinereo-fuscis, pectore vix pallidiore: abdomine imo sordidè albo: pedibus et rostro sordidè incarnatis, hujus apice et lateribus nigris.

Adult Male (Great Britain). Entire plumage pure white, basal portion of the bill yellow, this colour extending along the upper mandible beyond the opening of the nostrils, which are black; anterior portion of the beak black; bare loral space also yellow; iris dark brown; legs blackish. Total length about 5 feet, gape 3·95 inches, wing 23·2, tail 8·9, tarsus 4·3, middle toe with claw 5·2.

Adult Female. Resembles the male, but is rather smaller in size.

Young. Head, neck and upper parts dull pale ashy brown, breast and upper abdomen similar, but rather paler, lower abdomen and crissum dull white; beak dull flesh-colour, the tip and lateral margins black; legs dull flesh-colour.

Obs. According to Yarrell the internal distinctions of the Whooper are very conspicuous. The cylindrical tube of the trachea or windpipe, he remarks, "passes down the whole length of the long neck of the bird in the usual manner, but descends between the two branches of the forked bone, called the

merrythought, to a level with the keel of the breastbone or sternum. The keel of the breastbone is double, and receives between its two plates or sides the tube of the trachea, which, after traversing nearly the whole length of the keel, turns suddenly upon itself, passing forwards, upwards, and again backwards, till it ends in the vertical bone of divarication, from whence the two long bronchial tubes go off one to each lobe of the lungs. The depth of the insertion is not, however, so considerable in females or young males."

The Wild Swan, or Whooper, inhabits Northern Europe and Asia during the warm season; but at the approach of winter it migrates south, and usually reaches North Africa in the coldest season of the year. It visits Great Britain annually, and is sometimes met with in some numbers. It is said to have formerly bred in the Orkneys; but it certainly does not do so now. Mr. A. G. More says (Ibis, 1865, p. 441):—"In his 'Fauna Orcadensis' (p. 133), Mr. Low remarks of the Wild Swan, that 'a few pairs build in the holms of the Loch of Stenness. But the few that build here never increase, being always robbed by the country people.' This observation was probably made about eighty years ago, the author having died in 1795. Messrs. Baikie and Heddle add, in 1848, that 'the birds have not been known to build there for many years.' Mr. J. H. Dunn tells me that old men well remember their fathers speaking of having taken several Wild Swans' nests on the small islands in the large loch of Harray, about one hundred years ago."

It visits almost all parts of our English coasts in the winter, its numbers varying much according to the severity of the season, it being much less common in mild winters than it is in very cold ones. It usually appears in November, but is more frequently seen from December to March. Speaking of the occurrence of this Swan on the Norfolk coast, Mr. Stevenson informs me that, "in 1854–55, a long and hard winter, when wildfowl of all kinds were extremely abundant, I saw upwards of twenty Whoopers that had been killed on our coast or inland waters, but all of them between January and March; and this was also the case in 1860–61, when a severe frost, lasting with little intermission from December to the end of the following February, brought great numbers of Wild Swans and other fowl to our shores, though, from the broads and other inland waters being early frozen over, they were chiefly confined to the coast and salt marshes, or passed on further to the south. The return of these fine birds in spring, on their passage northward, is occasionally remarked, of which an instance occurred in the first week of March 1861, when, the weather at the time being mild and open, a 'herd' of twelve were seen to alight early in the morning on the open water of 'Bargate,' at the entrance to Surlingham Broad; but being disturbed later in the day, they again took wing and quitted the neighbourhood altogether. In January 1864, and again in the winter of 1869–70, several were shot in this county; but for the last twenty years at least there has been no such season for Whoopers as that of 1870–71, when the hard weather of that memorable winter commenced with a heavy fall of snow on the 20th of December, increasing day by day until it was over a foot deep on the level. The frost was so intense that the thermometer, even by day, registered only a few degrees above zero; and this lasted with but little abatement up to the 12th or 13th of January. A rapid thaw on the 14th cleared the ground of most of the first fall of snow; and though frosts continued at night, the weather moderated considerably up to the 28th, when the snow again fell heavily, and the broads and smaller streams were thickly ice-bound up to the first week in February. My first notice of Wild Swans in that season was an intimation from Mr. Anthony

Hamond that in the last week of December he had seen a 'herd' of forty passing along the coast at Horsey, near Yarmouth; and during the first week in January a flock of twenty-six were observed on one occasion feeding close inshore off Holme Point, near Hunstanton; and another lot of seven frequented the entrance to Heacham creek. On the 12th several appeared off the Sherringham beach, passing along the coast; and on the same day, far inland, a considerable number were both heard and seen passing over the town of Wymondham, near Norwich. Several made their appearance on the smaller streams in the immediate neighbourhood of this city; and about the same time I heard of a flight, of which sixty are said to have been counted, that passed over the town of Aylsham, some ten miles from the sea. At Yarmouth, on the 18th, a 'herd' of eighteen settled on Breydon water, but escaped from the gunners; and, strange to say, with the exception of a fine adult bird shot on the lake at Kimberley, on the 20th of January, none appeared for sale in the Norwich Market or in the shops of our birdstuffers till early in the following month. From the 6th to the 10th of February the weather was warm and sunny, but only to be followed by more snow and a biting wind frost, far more trying to fowl of all kinds than any thing previously experienced; whilst a terrific gale on the 10th, with blinding snow-storms, strewed our eastern coast with wrecks, and compelled shore birds of all descriptions to take shelter inland. During this month several Whoopers were killed on Breydon, many more along the shores of the Wash, and others inland in various localities; but as to the numbers actually procured in Norfolk during that and the preceding month I have no means of judging accurately, since by far the larger portion were sent up to London for sale, only some half-dozen appearing at intervals in the Norwich Market. Mr. J. H. Gurney, jun., was informed by a dealer in Leadenhall Market that he had received as many as a hundred Whoopers during the frost, chiefly from King's Lynn; and one poulterer at Lynn stated he had had thirty."

Mr. Cordeaux says that it occurs nearly every winter on the Yorkshire and Lincolnshire coasts and within the Humber, and in the severe seasons of 1864–65, 1870–71, these Swans were particularly abundant. Mr. Hancock also remarks that in Northumberland and Durham the Whooper is "a rather common winter visitant. Prestwick Car was a great resort of this species, which was seen there every winter. It also frequently visited Fenham Flats, where Edmund Crawshay, Esq., has shot several. In the winter of 1871 three of these noble birds joined the Mute Swans on Gosforth lake. A hole having been made in the ice for their accommodation, they all fed together, and the strangers became remarkably tame. They were at length captured and pinioned. In the spring all three disappeared: they had wandered, probably obeying the impulse to migrate; and two of them may have fallen a prey to the fox, as only one returned, and is still on the lake."

In Scotland this Swan is frequently met with, its appearance being regulated by the state of the weather. It usually arrives in the Outer Hebrides in November, though earlier than that in some years, especially during the prevalence of northerly winds; and about the middle of April, Mr. Robert Gray says, "the noble congregation breaks up into detachments, as the Bernacle Geese are known to do; and after much sounding of bugles summoning the feathered hosts into the air, they soon get into their line of flight, and are afterwards seen at a great height steering for their northern home." According to Dr. Saxby, the Whooper arrives in large flocks in September and October, only staying long enough to rest; and it reappears sometimes as early

as the end of February, but usually in March and April, on its passage northward. Thompson says that it visits Ireland occasionally, perhaps regularly, in winter.

It is said to occur in Greenland; but it is possible that it is the American species which is found there. Professor Reinhardt says that, "according to accounts received from the Eskimaux, the Swan formerly bred on several places near Godthaab, but was long ago totally exterminated by persecution during the moulting-season (Holböll, Ornith. Bidr. &c. p. 432). In the last fifteen years this bird has again made its appearance in Greenland; some examples were (according to Holböll) observed at Julianehaab in 1846; I have myself seen two specimens, sent from South Greenland in 1852; and in June 1859 a beautiful Swan was shot at Attamik, nearly ten (Danish) miles to the north of Godthaab. The Swan may therefore in future again breed in Greenland, if left undisturbed." It is said to be common and resident in Iceland, where it breeds in many parts of the interior. In the winter it congregates in large flocks.

The Whooper visits the Færoes in the spring and autumn, remaining there sometimes for a few days; and it is said to have formerly bred there, but certainly does not do so now. In Scandinavia it is common. Mr. Collett says that it breeds sparingly in the interior of Finmark, as, for instance, on the Tanaelf, at Karasjok, and at Polmak, as also on the Pasvigelf; but it is doubtful if it nests in Norway below the arctic circle. It is met with in the southern and western districts on passage, and winters on the coast as well as in open places in the interior. As a rule, it nests only in Northern Sweden; yet Nilsson says that it has been shot in Wermland during the breeding-season. It is numerous throughout Southern Sweden on passage; and some remain to winter there, though most pass further south at the approach of winter. Westerlund says that it nests in Sweden as far south as the Tåkern lake and Skåne; but Meves believes that he has mistaken *Cygnus olor* for this species.

In Finnish Lapland and in Northern Finland the Whooper nests in many localities; and Dr. Palmén gives (Finl. Fogl. ii. p. 811) detailed notes respecting its breeding-range in those countries. It is doubtful if it nests in Muonioniska; but it certainly does so in Sodankylä and Kittilä. It breeds also in Torneå, Kuusamo, Pudasjärvi, Iså, on Karlön near Uleåborg, inland, also in the Hyrynsalmi and Puolanko parishes, sparingly in Paltamo, and also in Northern Savolax near Irykkä bruk, in 63° 45′ N. lat.; and Aschan was told that it occurs during the breeding-season in Iisalmi parish, but it no longer nests in the Kuopio district. Arthur von Nordmann records it as breeding in considerable numbers in Northern Karelen; Malmberg met with it in Ilomants; and the peasants assured Backman that in Eastern Finland it nests as far south as the Suojärvi parish in 62°–62½° N. lat. Otherwise it is found on passage throughout Finland. In Russia it is common in the northern district. Sahlberg says that it breeds on the lakes north of Povänetz in Russian Karelen; and Kessler saw newly hatched young birds on the Aschebska lake in the Olonetz Government. Sabanäeff informs me that it breeds in the Jaroslaf, Tver, and Kostroma Governments, and that, according to Bogdanoff, it is numerous on the Central Volga. Sabanäeff also found it abundant on the lakes of the Severtsk Ural during passage; and Artzibascheff says that it is common on the Sarpa. It breeding-range extends far north. It is stated to nest regularly in the northern portions of the Archangel Government; and Von Heuglin records it as occurring on the island of Novaya Zemlya.

Messrs. Seebohm and Harvie-Brown, who met with this Swan on the Petchora river, write

(Ibis, 1876, p. 437):—"Wild Swans were amongst the first migrants to appear; and the first note we have of their arrival is dated the 11th May. They were afterwards seen occasionally before the snow melted and up to the date of the breaking-up of the ice on the Zylma (20th May), but not again until the 12th June, when, as we descended the river, a flock of five or six were seen frequenting a lagoon, and were disturbed by the flag flying at our masthead as it appeared above the fringing belt of willows. Afterwards we saw Swans occasionally along the river, and numerously in the neighbourhood of Alexievka. We found a nest of eggs on an island opposite Kuya on the 17th of June; and several nests were brought in by the Zyriani and by our own men, who were expressly told off to find Swans' nests, and, if possible, to secure the birds. In this latter part of their instructions, however, they signally failed; and we had almost despaired of identifying the rarer species and obtaining authentic eggs, although we felt tolerably certain that Swans of two sizes did pass Ust Zylma on migration. We saw Wild Swans frequenting the 'kourias' and delta generally up to the last days of our stay. As we left Alexievka on our voyage home on board the 'Triad' we met five boats returning from Varandai; and we were told by the Russian sailors on board the steamer which was towing us out of the river that they would bring many furs and Swans' and other skins to the great markets. At the end of August boats return from the still distant island of Kolguef with many Swans' skins and the down of various species of wildfowl. We regretted that we could not have remained one day longer at Alexievka to have seen these Varandai fishermen as they passed. These stores of furs and birds' skins, reindeer's flesh and seal-oil find their way, for the most part, to the markets of Piñega, and even as far as Nijni-Novgorod."

In Poland the Whooper is said to be much less common than *Cygnus olor*. It is a regular winter visitant to the coasts of North Germany, but rarely occurs on inland waters. Mr. Hugo Schilling says (J. f. O. 1853, p. 376) it is often seen on the island of Rugen, appearing early in October, and that in 1852 it was extremely numerous late in that month, so much so that the oldest inhabitants did not recollect having seen such numbers as were then observed. Collin says that it arrives in Denmark in October and remains there over winter, being found on the coasts in flocks of from 50 to 100 individuals. It occurs in small flocks on the coasts of Holland on passage; and in severe seasons it visits the coasts of Belgium and France, straggling even as far south as the marshes of Southern France which skirt the Mediterranean. Colonel Irby says that he examined a specimen shot on the Guadalquivir, below Seville, where this Swan is said to be common in some winters; and Mr. Howard Saunders states (Ibis, 1871, p. 396) that there is a specimen in the museum of Palma de Majorca.

Bailly says that it has occurred on several occasions in small flocks on the lakes of Savoy in severe winters, and, although somewhat rare, examples occur nearly every winter in Italy; and Mr. A. B. Brooke writes (Ibis, 1873, p. 442) that he believes it is not uncommon in winter in Sardinia, though there are no specimens in the Cagliari Museum. According to Mr. C. A. Wright (Ibis, 1864, p. 155), "from time to time, at rare intervals, small flocks of Swans have been seen flying along the coast of Malta in stormy weather;" and he adds that he examined a specimen, now in the Malta University Museum, which was shot there on the 27th of January 1847; but he subsequently (Ibis, 1874, p. 241) refers it to *Cygnus olor*, though he at the same time states that both *Cygnus olor* and *Cygnus musicus* occur in Malta.

In Southern Germany the Whooper is found now and again on passage and in winter. Dr. A. Fritsch says (J. f. O. 1872, p. 366) that it is of but rare occurrence in Bohemia in autumn and winter. Brownish-coloured young as well as old birds have been killed on the Sternteich near Abtsdorf, on the Iser near Jung-Bunzlau, on the Elbe near Podebrad, on the pond near Blatná, and, further, near Karlsbad, Nimburg, Frauenberg, and other places. It is occasionally seen in winter in Styria; and Messrs. Danford and Harvie-Brown say (Ibis, 1875, p. 426) that it is rarer than *Cygnus olor* in Transylvania; Herr Csáto and Buda Adám each shot one in October 1861 in the Strell valley; Von Tschusi-Schmidhofen states that several young Whoopers were killed in the vicinity of Salzburg about the middle of February 1872, and that there is one specimen in the museum of that town; Dr. Finsch writes (J. f. O. 1857, p. 386) that it is "abundant on the Danube and Black Sea in winter, and occurs in thousands at Varna;" and Messrs. Elwes and Buckley speak of it as being a winter visitant to Turkey, and tolerably plentiful in suitable localities. They shot one out of a flock near Kustendji on the 13th April. It is a winter visitant to Greece; and Lord Lilford found it in Corfu and Epirus, where it is not uncommon in severe winters. It occurs also on the coasts of Asia Minor, and was met with in Palestine by Canon Tristram, who writes (Ibis, 1868, p. 327):—"A fine adult specimen of *Cygnus ferus* was brought to me in the flesh at Jerusalem on December 26th, through the kindness of Dr. Chaplin, our medical missionary there. It had been shot on the Pool of Solomon two or three days before. I believe this is by far the most southern locality yet quoted for the species. I found, however, that the Swan was known by name and sight to our Arabs, who of course did not discriminate the species."

The Whooper certainly winters as far south as North Africa; for Captain Shelley records it as a visitant at that season in Egypt, and Von Heuglin states that it occasionally visits the lagoons of Lower Egypt during winter, but is less numerous there than *Cygnus olor*. Loche also writes that it visits the Algerian lakes pretty frequently, though it remains there only for a short time.

In Asia the Whooper is found as far east as Japan. Severtzoff met with it on passage in Turkestan; and Mr. Blanford, who met with it in Persia, says (E. Pers. ii. p. 304):—"I procured a young specimen; but I believe it belongs to this species. Swans, as Pallas has already noted, abound on the Caspian in winter; and I am told that on the Múrdáb, the great backwater between Resht and Enzeli, thousands are sometimes to be seen. In the depths of winter, when the northern part of the Caspian, near the mouth of the Volga, is frozen, all the birds fly south; and in the inlets near Enzeli, where frosts are unknown, all the swimmers and waders collect, it is said, in immense quantities, promising grand sport and many interesting captures to any one who will pass January and February at Resht or Enzeli. These places are easily accessible and fairly civilized." It is said to have occurred in Nepal, but has not been otherwise recorded from India. It is, however, tolerably common in Siberia. Von Middendorff met with the Whooper on the 29th May on the Taimyr river in 74° N. lat., and on the 27th of that month on the Boganida. It breeds up to 74½° N. lat. On the 8th August he met with it on the Great Schantar Island. Both Von Schrenck and Dr. Radde met with it on the Lower Amoor; and the latter says that it is as common as Bewick's Swan in the elevated steppes of Dauria, and it is especially numerous on the Central Onon and Upper Argunj, at Abagaitui and Kailassutui, in spring. The first

arrived at Tarei-nor on the 26th and 27th March (O.S.); and at Irkutsk he saw the first flocks on the 3rd April. In the autumn of 1856 he noticed them returning as late as the 19th and 20th September; and in the Bureja Mountains a few pairs were seen passing on the 14th August. Dr. Dybowski says that it arrives in Dauria in the second half of April and returns again about the middle of October; and, according to Colonel Prjevalsky, it is seen on passage in S.E. Mongolia, at Koko-nor, and may possibly breed in the marshes of Tsaidam, where the first appeared about the 14th February, though the main body passes in March. It is one of the first migrants to appear in spring at Lake Hanka, where a few remain to breed. Père David records it as occurring on passage in April and October near Pekin; Messrs. Blakiston and Pryer say that it is the commonest species of Swan occurring at Yezo, Japan; and one was sent from Hakodadi to Mr. Swinhoe.

In America there are two species of White Swans, both very distinct from any of our European species, though most nearly allied to the Whooper and Bewick's Swan.

The larger of these two species, *Cygnus buccinator*, Richards (Faun. Bor. Am. ii. p. 464, 1831), has the beak entirely black, without any yellow at the base; and a specimen from the Buttes, California, measures—gape 3·7, wing 22·0, tail 8·5, tarsus 4·4, middle toe 5·6. It has the bill longer than the head, and the anterior end of the nostril opposite the middle of the commissure; and it has twenty-four tail-feathers.

The second and smaller species, *Cygnus americanus*, Sharpless (Doughty's Cab. N. H. i. p. 185, pl. xvi. 1830), has twenty instead of twenty-four tail-feathers, has the anterior end of the nostrils considerably beyond the middle of the commissure, and an orange spot anterior to the eye on each side of the bill; and two specimens in the Cambridge Museum (one from the Buttes, California, 5th February 1855, and the other from Saunick, Vancouver's Island, 7th November 1864) measure—gape 3·4–3·5, wing 20·0–20·5, tail 6·7–6·8, tarsus 4·2, middle toe with claw 5·3–5·5.

Both *Cygnus americanus* and *Cygnus buccinator* vary considerably in size; so that size only cannot be relied on as a distinctive character.

Cygnus americanus is included by Macgillivray as a British species on the strength of a specimen he found in a poulterer's shop in Edinburgh in February 1831; but I scarcely think that it can fairly be introduced in our list.

In habits the Whooper does not differ much from the Mute Swan; but in elegance of form it does not come up to that bird, chiefly on account of its somewhat shorter neck, which is usually held straight, and not so gracefully bent as is the case with *Cygnus olor*. Nor is it so clumsy on dry land as the Mute Swan, but will not unfrequently seek its food there like the Wild Geese; and though it does not walk with such ease as these, yet it is able to move about with tolerable facility, and a winged bird will scuttle away so quickly that it is scarcely possible for a man to keep pace with it. On the wing it closely resembles the Mute Swan, though, unlike that bird, it is rarely silent for long when flying, but frequently utters its trumpet-like call, which enables one readily to distinguish it. It is very shy and suspicious; and I know scarcely any bird so difficult to approach within gunshot-range. When on passage, and in winter, the Whooper is gregarious, and collects together in tolerably large flocks; but it does not breed in colonies. When migrating, the flocks of these birds fly in wedge-fashion like the Wild Geese, and the

sound of their wings is not unlike the distant barking of dogs. Its loud trumpet-like call is usually uttered on the wing; and when many together are heard it sounds like the music of a pack of hounds in full cry.

Although so seldom tamed, the Whooper is said to be as capable of domestication as *Cygnus olor*; but if left unpinioned it will disappear when the flocks of its wild kinsmen pass on their way northwards. Dr. Saxby gives (B. of Shetl. pp. 232–234) an interesting account of a Whooper which was caught and tamed by a fisherman in the island of Yell, and remained in a state of domestication, though allowed to roam about at will, for upwards of two years, when, its wing-feathers having been allowed to grow, it joined a passing flock and never returned.

The Whooper breeds in high northern latitudes, nesting not, like the Mute Swan, in colonies, but singly, in the vast, almost unapproachable morasses of the high north, where its nest, which resembles that of *Cygnus olor*, is placed on a tussock, and is used, should the birds not be molested, several years in succession. According to the Swedish authors, six or eight eggs are laid; but Palmén states that in Finnish Lapland it only lays four or five, which are deposited in May. The young birds grow very slowly, and are said to be unable to fly until late in August, some not being fledged before Michaelmas. Mr. Benzon informs me that in Iceland it breeds commonly in the larger morasses about the middle of May, and usually lays five eggs, sometimes only four, and but seldom six. He adds, however, that he possesses one clutch of seven eggs. Of the series of eggs in his collection the earliest were taken on the 6th May, and the latest on the 30th of that month, and they vary in size from 101 by 65 to 115 by 75 millimetres. In my own collection are eggs from Iceland and Lapland, which are ivory-white or pale yellowish-white in colour, and vary in size from $4\frac{20}{40}$ by $2\frac{34}{40}$ to $4\frac{28}{40}$ by $2\frac{37}{40}$ inches.

I have not thought it necessary to figure more than the heads of this species, and have figured the adult male for comparison with Bewick's Swan.

The specimens described and figured are from Great Britain.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ad., b, juv. Great Britain.

E Mus. Brit. Reg.

a, b. Great Britain. *c.* Europe.

E Mus. H. Stevenson.

a, b, ad., c, d, juv. Norfolk coast.

CYGNUS BEWICKI.

(BEWICK'S SWAN.)

Cygnus olor β. minor, Pall. Zoogr. Rosso-As. ii. p. 214 (1811).
Cygnus bewickii, Yarrell, Trans. Linn. Soc. xvi. p. 445 (1833).
Cygnus minor, Keys. & Blas. Wirbelth. Eur. p. 82 (1840).
Cygnus melanorhinus, J. F. Naum. in Wiegm. Archiv, iv. p. 361, taf. viii. fig. 2 (1838).
Cygnus musicus minor, Schlegel, Rev. Crit. p. 112 (1844).
Olor minor (K. & B.), Bp. Cat. Parzud. p. 15 (1856).
Cygnus altumi, Baed., fide Degl. & Gerbe, Orn. Eur. ii. p. 474 (1867).

Cygne Bewick, French; *kleiner Schwan, schwarznasiger Schwan*, German; *de kleine Zwaan*, Dutch; *Pibsvane*, Danish.

Figuræ notabiles.

Kjærb. Orn. Dan. taf. 55; Naumann, Vög. Deutschl. taf. 297; Sundevall, Svensk. Fogl. pl. 81. fig. 3; Gould, B. of Eur. pl. 356; id. B. of G. Brit. v. pl. 10; Schlegel, Vog. Nederl. pls. 292, 293.

Ad. niveus, rostri basi (sed haud usque nares) et regione oculorum flavis: iride fuscâ: pedibus et rostro reliquo nigris.

Juv. Cygno musico similis, sed minor et saturatiùs coloratus: rostro plumbeo-nigro, ad basin lutescenti-incarnato: iride fuscâ: pedibus griseo-nigris vix rufescenti tinctis.

Adult Male (Leadenhall Market, November 1874). Entire plumage pure white; base of the bill lemon-yellow, this colour not reaching to the nostril; remainder of the bill black; iris brown; legs black; tail consisting of twenty rectrices. Total length about 46 inches, gape 3·4, wing 18·7, tail 7·0, tarsus 3·85, middle toe 4·9, the second and third primaries longer than the first and fourth.

Adult Female. Resembles the male, but is rather smaller in size.

Young. Is said to resemble the young of *Cygnus musicus*, but is of course much smaller, and the coloration of the plumage is rather darker; the base of the bill is yellowish flesh-colour, the remainder being plumbeous black; legs greyish black with a reddish tinge. The young bird is said to have only eighteen or nineteen tail-feathers.

Easily recognizable by its much smaller size from the Whooper, as well as by other characteristics above given, Bewick's Swan is indeed the smallest of our European Swans. It was first discriminated as being specifically distinct by Yarrell (*l. c.*), who, observing that the trachea and bones of a Swan sent to him for examination differed considerably from those of *Cygnus musicus*, was induced to investigate the matter, and soon proved the validity of the present species.

This Swan inhabits Northern Europe and Asia, ranging south, like its allies, at the approach of winter. It was supposed by Brehm, Naumann, and many continental authors to inhabit Iceland; but subsequent research has shown that *Cygnus musicus* is the only species found there; and Reinhardt expressly states (Naturh. Tidsk. ii. p. 532) that Bewick's Swan has never been obtained on that island. Nor has it occurred in Greenland; but, together with the Whooper, it is a regular visitant to the shores of Great Britain during the winter season, and is sometimes as numerous, if not more so than that species. It has been obtained in most parts of our coasts; and I have frequently seen specimens in Leadenhall Market. Mr. Cecil Smith believes that it visits the Channel Islands, though he has no proof that such is the case; and it certainly occurs on our southern and eastern coasts. Respecting its occurrence in Somerset, he writes:—"The winter of 1878–79 was a remarkable one for Swans in this county, several making their appearance in the end of autumn, and remaining throughout the hard weather; there were several large flocks in various parts of the moor about Athelney and Langport, which was much flooded and remained under water nearly all the winter. The first I saw was a young Whooper at one of the bird-stuffers' shops in Taunton; it had been shot in the moor some time in December. The next I saw was on the 29th of February, a fully adult Bewick's Swan in the flesh, at Mrs. Petherick's (also a bird-stuffer at Taunton). This one had been shot out of a considerable flock of Swans in Curry Moor; the flock remained about this place till the end of February or the beginning of March, after which time they seem to have departed, as I heard no more of them. Again, on the 24th of February Mr. Esdaile told me that four Wild Swans had been about his pond at Cotheleston for some time, and that one of them had been killed on the 10th of February by a fox; the head of this one was brought to me for identification; and it proved to be that of Bewick's Swan, as were probably the other four. These five are the only Wild Swans I have heard of in this parish (Bishops Lydeard) since my father shot one close by the pond here in 1829. I am not quite sure whether this was a Bewick's Swan or a Whooper—probably the latter, as it is usually the more common. My father set it up and kept it for a long time in his collection; but it eventually got moth-eaten, and was thrown away, and I have now only this note in my father's handwriting, at the head of the notice of the Wild Swan, Elk, Hooper, or Whistling Swan in his old edition of Bewick:—'Shot at Lydeard ponds, December 30th, 1829.' Other Swans, both Whoopers and Bewick's Swans, have occurred in other parts of the county at various times since then, the last note I have being four wild Swans shot on the mud near Burnham in January 1871, and two near Blendon, not far from Weston-super-Mare, about the same time; but whether they were Bewick's Swans or Whoopers I am unable to say, as I did not see them myself. The last killed, as far as I can make out, of the flocks which made their appearance in this county this year (1879) were shot near Glastonbury on the 13th of February, and were sent up to Mr. Bidgood, the curator of the museum at Taunton, to be stuffed for that institution, where I saw them in the flesh; these were also adult Bewick's Swans. The flocks of Swans were more widely spread this year than merely in this county, as appears from various notes in the 'Zoologist;' and some of them strayed as far as Guernsey, where one was shot in the beginning of January or end of December, and was recorded in the 'Guernsey Mail and Telegraph' for the 4th of January as having been shot in that island a few days before. It was said to be a young bird, grey in colour. Whether it was a Bewick's Swan or a Whooper I have not been able to make out; for

though I wrote directly I heard of it for further information and, if possible, for the head, I could not find out any more about it, except that the body had been eaten, and all the rest thrown away. Probably, from the size, it was a Whooper; both species, however, seem occasionally to occur in the islands, as Mr. Metivier, in his Guernsey 'French Dictionary,' under the term Hucard, says 'Notre Hucard est le Whistling Swan ou Hooper des Anglais,' and Mr. MacCulloch, who has lived long in the islands, informs me that the Whooper is not the only species of Wild Swan that occurs here. Of course the other could only be Bewick's Swan." Mr. Cordeaux says that it visits the Humber district during severe winters, but is never so numerous as the Whooper; and he remarks that he has only seen two immature birds during the last fifteen years. Mr. Hancock writes (B. of North. & Durh. p. 144) respecting its occurrence in Northumberland and Durham, "it is rather surprising that Bewick's Swan was not recognized as a British species till 1829. In January of that year I purchased an example of it in a fruiterer's shop in Newcastle; it was shot out of a flock of about forty at Prestwick Car a day or two before. I at once perceived its specific distinctness from the common species, having carefully examined both its external and internal characters; it was a male. On the 7th of February following another example was killed, at Haydon Bridge, and was sent to the Newcastle Museum. This specimen I also examined, and found it corresponded exactly in every respect to my own. On dissection this second example proved to be a female; but the other internal characters were found to be similar to those of my specimen. These two Swans I believe were the first fully recognized individuals of this species in England. The Haydon-bridge example went into the hands of the late Mr. R. R. Wingate to stuff for the Newcastle Museum, and is still preserved there. My specimen I prepared myself; and it has ever since formed part of my collection. A notice on the supposed new Swan was drawn up by the late Mr. R. R. Wingate, and read on the 20th of October, 1829, at a meeting of the Natural-History Society of Northumberland, Durham, and Newcastle-upon-Tyne, and was published the same year in the 'Transactions' of that Society, vol. i. p. 1; but by some unaccountable inadvertency my specimen was not alluded to.

"Mr. Yarrell read at the meeting of the Linnæan Society, on the 19th of February 1830, a description of the supposed new species, which was afterwards published in the 'Transactions' of that Society (vol. xvi. p. 445, 1833). It appears that that gentleman has previously (24th of November 1829) given some account of the distinguishing characters of Bewick's Swan to the Zoological Club of the Linnæan Society.

"In November 1829 seven specimens of the bird were killed by a right and left shot, upon Sweethope Lough, by the gamekeeper of the late Sir John Trevelyan, Bart., of Wallington. In February 1837 five specimens of this Swan were shot out of a flock of eleven, upon a large fish-pond at Blaydon, by the gamekeeper of the late Sir Matthew White Ridley, Bart.; two of these are preserved in my collection."

According to Mr. Robert Gray (B. of W. of Scotl. p. 359) it is found in the Outer Hebrides, frequenting the same lakes as the Whooper. It has also been obtained on Loch Lomond, and on Hogganfield Loch near Glasgow; four were shot in January and February 1871 on Castle-Semple estate, Renfrewshire; early in the latter month other two were killed at Barnashalag, in Argyle-

shire; and five were shot in Wigtownshire in January 1871. In the east of Scotland, Mr. Gray says, "it has likewise been noticed from Berwickshire to the Shetlands, where it is known as a regular winter visitant, appearing at the same season as the Whooper. At Dunbar and other places in East Lothian it has been met with occasionally, but chiefly in immature plumage." Dr. Saxby remarks (B. of Shetl. p. 235), that in Shetland this Swan retires northwards some weeks earlier than the Whooper. It occurs there in autumn and spring; and in rough weather it often arrives in a very wearied condition, though it is a bird strong of wing.

Thompson states that Bewick's Swan is more numerous in Ireland than the Whooper, and remarks (B. of Irel. iii. p. 13), "In February 1830 a flock containing seven of these Swans alighted in a flooded meadow near Belfast, where they were shot at, and two of them so disabled by the one discharge as to be, after some difficulty, secured. They were purchased by my friend Wm. Sinclair, Esq.; and on their wounds being found so trivial as merely to incapacitate them for flight, were placed in his aquatic menagerie, where, in company with many other species of wild fowl, chiefly Anatidæ, they have ever since remained. On March 13, 1830, another specimen of this Swan appeared in our market, and was purchased by Richard Langtry, Esq., who has it preserved in his collection."

According to Collett a specimen was shot at Mjösen, in Norway, in 1835; but it has not been observed in Sweden. Palmén says that he only knows of three instances of its occurrence in Finland—once in Helsinge parish in 1843, once in Sibbo on the 3rd May 1851, and the third example was obtained near Lovisa in April 1869. It inhabits Northern Russia, and breeds on the shores of the Arctic Ocean. Either this species or *Cygnus musicus*, or perhaps both species, breed in considerable numbers in Novaya Zemlya. That this Swan occurs there is certain, as Von Heuglin obtained one in August at Nechwatowa, Kostin Shar.

Messrs. Seebohm and Harvie-Brown, who met with this Swan on the Petchora river, write (Ibis, 1876, p. 438):—"To determine, if possible, the breeding-haunts of this species of Swan, and bring home authentic eggs to England, was one of the principal aims of our expedition. From the time of our arrival at Ust Zylma in the middle of April, to that of our departure for the delta in the beginning of June, we had acquired no satisfactory evidence of its presence. We were informed by the inhabitants at Ust Zylma, and by the best sportsmen of the town, that there were two species, but that the smaller went to the east of the Ural Mountains to breed. But we had long since ceased to attach much importance to any information we received on such subjects. Information almost invariably proved conflicting and unsatisfactory.

"We had received a very small Swan's egg which had been brought the previous summer from Gorodok; but we could learn nothing further concerning it, except that it might have originally come from Varandai, or might have been taken in the neighbourhood of Gorodok. We examined two specimens of the common Wild Swan, shot near Ust Zylma at the time of migration, and took drawings and measurements for future use. We had ourselves seen a good many Swans flying overhead or settling on the ice of the river; but in no case were we able to identify them, though we settled in our minds that there were two of different sizes.

"With nothing, therefore, to guide us in our search, save the last-mentioned item, we started on our voyage down the river in the beginning of June. We saw Swans here and there, but without identifying them. On arriving at Kuya, and while shooting on a swampy

willow-covered island close to that place, Seebohm and Simeon found a Swan's nest containing four eggs. We lay for a couple of hours afterwards near the nest in the hope of getting a shot. Simeon was heard to remark, 'If the Swan is a little blind perhaps he will shoot it.' We did not shoot it, and no wonder, as a pair of Hooded Crows, which had a nest in the vicinity, loudly proclaimed our unwelcome presence, and, moreover, the somewhat open willow-scrub offered but a very insufficient means of concealment. We consoled ourselves with the fact that the four eggs were *very large*, and finally gave in, took them, and the next day continued our voyage until we arrived at Alexievka. On the islands of the delta our men searched diligently for Swans' nests, incited by the offer of a reward of five roubles for the *eggs and bird* of any species of Swan, which reward we promised to any one, either of our own men or of the Zyriani workmen, who would bring them to us. Two or three nests were found. At one a trap was set by Simeon and Little Feodor, which was too weak to hold the bird. The two eggs of this nest were smaller than any we had yet got. All chance of identifying these was lost, as the Swan had gone into the trap and left in it only a few feathers. At another nest we watched a whole day and night in a small branch-hut which had been erected previous to our own arrival at the spot, and which was quite sufficient in itself to scare any Swan away. Piottuch and Harvie-Brown relieved one another at the post, but, it is almost needless to say, without success; indeed the watch was kept up more for the purpose of doing all possible justice to the finder than with any expectation of getting a shot. This nest was in the middle of dense jungle of willow-scrub between two small lakes. There were no tracks leading to it made by the birds; and the only way they could have come to it must have been from above.

"It is needless to recount more failures. Suffice it to say that the difficulties of finding a Swan's nest and afterwards of obtaining the bird it belonged to are very considerable in these densely covered islands of the Petchora delta. Had we possessed a good steel trap or two, perhaps we should have had better success, perhaps not.

"At last, one day, the 29th June, a Russian fisherman arrived in his boat at Alexievka, having come from his fishing-encampment lower down the river. He brought with him some eggs, and amongst them two very small Swan's eggs, which we purchased. He then told us that the bird had been caught at the nest, and was in the possession of his mate, who was still fishing down the river. He could not have heard any thing of our offer of a reward, as we were the first to speak with him after his arrival. We took the first opportunity, which occurred some days after (on the 6th July), of going down the river with the steamer to Stanavoialachta, near which place we found the men we wanted, one of whom was known to our steersman, Big Feodor, and whom some time before we ourselves had actually spoken to when returning from our first trip to Stanavoialachta. We were promptly informed that the skin of the Swan was then lying at Mikitsa, a small village five versts south of Kuya, in the house of the fisherman, who had sent it up there, and that we could get it if we paid for it. We returned to Alexievka; and next day we instructed our most intelligent man, Little Feodor, to ferret out the bird at Mikitsa, sending him up to Kuya in the steamer. In due course he returned triumphantly bearing the skin, with feet attached, and the bill separate. He had purchased the former for one rouble, and had also secured the bill, which, in accordance with the usual practice, had been cut off and given to the children to play with. There was no other Swan's skin in the house,

nor, as far as he could learn, in the village, except this. It was Bewick's Swan; and we have reason to believe, and none whatever to doubt, that it was the veritable bird caught upon the nest which contained the two eggs which we had purchased from the other fisherman on the 29th June. We consider these eggs thoroughly satisfactory, and the chain of evidence in all reason complete.

"The egg of *Cygnus bewicki* is smaller than that of *Cygnus musicus*, the former measuring 3·95 inches in length, and the latter 4·1 to 4·6. We may also remark that our eggs of the Wild Swan are cream-coloured and glossy, whilst those of Bewick's Swan are white and dull.

"On the 26th July two of our boatmen, Little Feodor and Simeon, came to the wreck at Dvoinik carrying a fine Bewick's Swan. They had had a long day and night upon the tundra, and had covered a considerable extent of country. According to their account, extracted by much cross-questioning, with and without Piottuch's assistance, they had been away towards the south-west and had seen a great lake near the sources of the Eevka and Erisvanka rivers. They said they had walked a distance of twenty-five to thirty versts—which, upon the North-Russian tundra, is equivalent at least to as many miles on a Yorkshire moor. They had seen nine Swans, 'all of the small kind,' at the edge of the big lake, and had succeeded in stalking up to within thirty paces of them. On being slightly alarmed the Swans swam close up together and stretched up their necks. Simeon and Feodor both aimed; but Feodor's 'pooshka' (literally *cannon*) refused to go off. Feodor therefore was left disconsolate; but Simeon succeeded in shooting one. Afterwards we saw several Swans at Dvoinik, and the footprints of others on the damp sand or mud. The measurements of these latter agreed with the specimen procured, the middle toe of which is nearly one inch shorter than that of the larger species. We consider that Bewick's Swan is not uncommon on the delta of the Petchora, but, from what we have seen, that its distribution there does not extend so far up the river in the breeding-season as that of the Whooper, but that both species pass Ust Zylma on migration, though of this last we cannot, of course, speak positively."

It occurs in Central Russia on passage. Mr. Sabanäeff is uncertain as to whether it breeds in the Kaslinsky Ural; but it is said to be tolerably numerous near the boundary of the Tobolsk Government. Bewick's Swan is not uncommon in North Germany on passage and in winter, and is said to have been met with most frequently on the Weser and Ems. Mr. Schalow, however, states that it is only of rare occurrence in Mark Brandenburg.

In Denmark, Mr. Collin remarks, it used formerly to be considered extremely rare, but later investigation has shown this to be wrong. In March 1857 an old female was sent from Ringkjöbing to the Copenhagen Museum; and since then examples have been obtained at the same place from time to time; and it appears to occur there as regularly as the Whooper, appearing rather later. It has also been met with in other parts of Denmark.

This little Swan occurs on passage on the coasts of Holland. Messrs. Degland and Gerbe say that it has on several occasions been killed in Belgium, on the Escaut and Meuse, near Liége. About fifteen were brought to the Paris market in the winter of 1844–45; and it has been shot near Montreuil-sur-Mer. Since then it has appeared with tolerable frequency on the coasts of the Channel, as well as on those of the Gulf of Gascony. It is said to straggle in Southern France as far down as the shores of the Mediterranean; but it has not been obtained in Italy or on the

eastern shores of the Mediterranean, and it is very doubtful if it has ever been met with as far south as the coasts of North Africa.

In Asia Bewick's Swan is found as far east as Japan. Von Middendorff and Von Schrenck both observed it in Siberia; and Dr. Radde received two specimens from the elevated steppes of Dauria, where, however, it does not appear to breed. Père David says that in China this Swan is even more abundant than the Whooper; but the Chinese confound the two species under the name of *Tién-ngo*. Messrs. Blakiston and Pryer, who record it from Japan, say that many Swans are seen on the Shimosa lakes, probably of several species, but that a specimen in the Kiyoiku Hakubutsukan is referable to *Cygnus bewicki*.

In general habits the present species of Swan does not differ from *Cygnus musicus*; but it is rather slighter built, much smaller, and when swimming it floats higher out of the water. It is also said to be less shy and more easy of approach than that species; and its plumage is of a more brilliant and purer white colour. Mr. Blackwell remarks that it has "somewhat the air and appearance of a Goose, being almost wholly devoid of that grace and majesty by which the Mute Swan is so advantageously distinguished." Yarrell observes that Bewick's Swan "differs much more decidedly from the Whooper than its external characters. The principal and most obvious difference is in the trachea, which forms one of the best distinctions in the separation of nearly allied species throughout this numerous family. The tube of the windpipe is of equal diameter throughout, and, descending in front of the neck, enters the keel of the sternum, which is hollow, as in the Whooper, traversing its whole length. Having arrived at the end of the keel, the tube then, gradually inclining upwards and outwards, passes into a cavity in the sternum destined to receive it, caused by a separation of the parallel horizontal plates of bone forming the posterior flattened portion of the breastbone, and producing a convex protuberance on the inner surface. The tube also changing its direction from vertical to horizontal, and reaching within half an inch of the posterior edge, is reflected back after making a considerable curve, till it once more reaches the keel, again traversing which in a line immediately over the first portion of the tube, it passes out under the arch of the merrythought, where, turning upwards, and afterwards backwards, it enters the body of the bird to be attached to the lungs in the usual manner. This is the state of development in the oldest bird I have met with. The degree next in order, or younger, differs in having the horizontal loop of the trachea confined to one side only of the cavity in the sternum, both sides of which cavity are at this time formed, but the loop of the tube is not yet sufficiently elongated to occupy the whole space; and the third in order, a still younger bird, possesses only the vertical insertion of the fold of the trachea; yet in this specimen the cavity in the posterior portion of the sternum already exists to a considerable extent.

"These are the peculiarities of structure which belong to the tube and the sternum. The bronchiæ are very short; but the flexible part intervening between the bone of divarication and the bronchial rings is considerable, producing an effect to be hereafter noticed, this elongated, flexible, and delicate portion being defended on each outer side by a distinct membrane, attached to the whole edge of the bone of divarication, and to a slender semicircular bone on each side, by which it is supported.

"The muscles of voice with which this bird is provided pass down, as usual, one on each

side of the trachea, till the tube is about to enter the cavity in the keel; they then quit that part of the tube to be attached to the ascending portion of the curve, which they follow, ultimately dividing into two slips, one of which, inserted upon the surface of the bone of divarication, governs the length of the preceding flexible portion of the tube; the other slip passes off downwards to be attached to the inner surface of the breastbone, anterior to the first rib."

Yarrell (B. Birds, iii. pp. 205, 206) gives woodcuts showing the above-mentioned peculiarities in the anatomical structure of this Swan.

The food of *Cygnus bewicki* is said to differ in no respect from that of its ally the Whooper. Beyond the particulars above given by Mr. Seebohm I find nothing trustworthy on record relative to the nidification of this species. When at St. Petersburg some years ago, I was shown in the Museum of that city several eggs of Bewick's Swan from Northern Russia, which I was assured had been sent with the head of the parent bird. One of these, which I obtained by exchange, is dull yellowish white, rather rough in surface of shell, and measures $3\frac{12}{40}$ by $2\frac{16}{40}$ inches.

As the difference in the coloration of the bill is one of the chief characteristics of this Swan, I have deemed it best to figure the head only, and not the entire bird.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Leadenhall Market, November 1874.

E Mus. Brit. Reg.

a, b, c, ad. Great Britain. *d, ad.* Amoy, China.

E Mus. Cantab.

a, ad. Great Britain.

Genus TADORNA.

Anas apud Brisson, Orn. vi. p. 344 (1760).
Tadorna, Fleming, Phil. of Zool. ii. p. 260 (1822).
Casarca apud Bonaparte, Comp. List, p. 56 (1838).
Vulpanser apud Keyserling & Blasius, Wirbelth. Eur. p. 84 (1840).

This genus is represented in the Palæarctic, Ethiopian, Oriental, and Australian Regions, two species being found in the Western Palæarctic Region.

In many respects the Sheldrakes resemble the Geese, and form, as it were, a link between them and the Ducks. They are partial to salt water; and one species, *Tadorna cornuta*, is never found far from the sea; but the other European species is usually found on the large rivers, frequently far away from the sea. They walk with ease, like the Geese, and frequently graze in the corn-fields and pastures. They fly with ease, their flight resembling that of the Mallard; and their call-note is either a quack or else a deep trumpet-like call. They feed on vegetable substances and on small mollusca, chiefly on the former. They nest in holes in the ground, hollow trees, or crevices in the rocks, and deposit numerous creamy-white eggs.

Tadorna cornuta, the type of the genus, has the bill higher than broad at the base, gradually depressed, rearcuate and becoming broader towards the end, which is rounded; unguis oblong, bent abruptly downwards and inwards; nostrils oblong; the lamellæ thin and elevated, the ends just showing near the centre of the edge of the bill; trachea of nearly uniform width, a little enlarged at the lower part of the neck; the lower larynx with two unequal, irregularly rounded, thin, bony sacs; bronchi moderate; wings long, pointed, full, the second quill longest; inner secondaries oblong, elongated; tail moderate, slightly rounded; legs short, tibia bare for a short distance; tarsus short, compressed, anteriorly scutellate; hind toe elevated, with lobiform membrane; anterior toes rather long, interdigital membrane full; claws small, compressed, rather obtuse.



E.Neale lith.

Hanhart imp.

COMMON SHELDRAKE.

TADORNA CORNUTA.

TADORNA CORNUTA.

(COMMON SHELDRAKE.)

Anas tadorna, Briss. Orn. vi. p. 344, pl. xxxiii. fig. 2 (1760).
Anas tadorna, Linn. Syst. Nat. i. p. 195 (1766).
Anas cornuta, S. G. Gmel. Reise d. Russl. ii. p. 185, pl. 18 (1774).
Le Tadorne, Buff. Hist. Nat. Ois. ix. p. 205, pl. xiv. (1783).
Tadorna familiaris, Boie, Isis, 1822, p. 56.
Tadorna bellonii, Steph. in Shaw's Gen. Zool. xii. pt. ii. p. 72, pl. 45 (1824).
Tadorna vulpanser, Flem. Hist. Brit. Anim. p. 122 (1828).
Vulpanser tadorna (L.), Keys. & Blas. Wirbelth. Eur. p. 84 (1840).
Tadorna gibbera, C. L. Brehm, Vög. Deutschl. p. 856 (1831).
Tadorna littoralis, C. L. Brehm, op. cit. p. 857 (1831).
Tadorna maritima, C. L. Brehm, op. cit. p. 858 (1831).
Tadorna schachraman, C. L. Brehm, Vogelfang, p. 370 (1855).
Tadorna belonii (Steph.), Degl. & Gerbe, Orn. Eur. ii. p. 499 (1867).
Tadorna cornuta (Gm.), G. R. Gray, Hand-l. of B. iii. p. 80. no. 10618 (1871).

Sheldrake, *Burrow-Sheldrake*, *Bargander*, English; *Cradh-gheadh*, Gaelic; *Le Tadorne*, French; *Pato-tarro*, Spanish; *Volpoca*, Italian; *Culuvert-ta-Barberia*, Maltese; *Bou-habaïda*, Moorish; *Brandente*, *Bergente*, *Hohlente*, German; *Bergeend*, Dutch; *Gravand*, Danish; *Gravand*, *Fagergaas*, Norwegian; *Grafand*, Swedish; *Ristisorsa*, *Kivisorsa*, Finnish; *Pegannka*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 53; Werner, Atlas, *Palmipèdes*, pl. 38; Kjærb. Orn. Dan. taf. 46, and Suppl. taf. 25; Frisch, Vög. Deutschl. taf. 166; Fritsch, Vög. Eur. taf. 50. fig. 6; Naumann, Vög. Deutschl. taf. 298; Sundevall, Svensk. Fogl. pl. 58. fig. 1; Gould, B. of Eur. pl. 357; id. B. of G. Brit. v. pl. 11; Schlegel, Vog. Nederl. pls. 303, 304.

♂ *ad.* capite et collo superiore nigris viridi nitentibus, pilei plumis elongatis: collo imo albo: dorso et fasciâ magnâ circa pectus rufescenti-ferrugineâ: dorso imo, uropygio et supracaudalibus albis: caudâ albâ nigro apicatâ: scapularibus et remigibus primariis nigris, secundariis extùs nitidè viridibus, intimis longissimis extùs castaneis et intùs albis, centraliter lineâ magnâ nigrâ notatis: abdomine albo, centraliter lineâ magnâ nigrâ notato: subcaudalibus aurantiaco-rufis: rostro sanguineo, carbunculo magno ornato: pedibus pallidè carneis: iride fuscâ.

♀ *ad.* mari similis sed minor et sordidior: fasciâ circa pectus angustiore.

Adult Male (Nordland, Norway). Head and upper neck deep black, with a rich bottle-green gloss; feathers on the hind crown and nape considerably elongated; lower neck pure white all round; back rich light foxy red, this colour continuing in a broad band all round the body, broadening on the breast; lower

back, rump, and upper tail-coverts white; tail white, tipped with black; scapulars rich velvety black; primary quills black; short secondaries on the outer web rich bottle-green, and on the inner web black; the long inner secondaries chestnut-red on the outer and white on the inner web, with a stripe of black along the outer side of the shaft; underparts below the breast white, except the under tail-coverts, which are orange-red; a broad stripe of black all along the centre of the body, widening on the lower abdomen; bill red, a large fleshy knob on the base of the upper mandible also red; legs fleshy pink; iris reddish brown. Total length about 19 inches, culmen 2·25, wing 13·0, tail 5·2, tarsus 2·05.

Adult Female. Resembles the male, but is rather smaller and duller in colour.

Young. Before the first moult the young bird differs not a little from the adult; the forehead, cheeks, fore part of the neck and entire underparts are white; crown, nape, and hind neck blackish brown; wing-coverts tipped with deep grey; feathers of the speculum tipped with white; bill and legs pale flesh-red.

Young in down (Hitteren, Norway, 25th June). Covered with close rather short down; crown, nape, and a stripe down to the back dark brown, with an olivaceous tinge; fore part of the back a broad stripe along the centre of the back to the tail, and a broad irregular cross band on the lower back deep brown like the head; rest of the plumage white; forehead and space to the eye also white.

Obs. Some authors state that the present species assumes, like many others of the Ducks, a regular summer dress which is only retained for a short time; and Meves, a most excellent observer, insists on this being the case, and he gives (Öfv. K. Vet. Ak. Förh. 1867, p. 287) a most careful description of this stage of plumage, which I translate as follows:—"A male, shot on the 19th July, had the bill and the lump on it brick-red, the latter smaller than in the spring; legs pale red; the green feathers on the head and neck paler in colour, and about a third shorter than in the spring; the feathers of the reddish brown band over the shoulders and on the sides of the breast edged with black, and having a whitish margin at the tip, the remainder vermiculated with four or five rows of dots; on the breast the colour is darker, and runs into the blackish brown band along the belly, this band becoming paler until it vanishes near the crissum; under tail-coverts pale rust-yellow below, and above white with black tips; the black bands on the shoulders duller and narrower; the quills and rectrices had not been cast. The bill in the female was still paler; the band across the upper part of the back blackish grey, finely vermiculated, towards the breast becoming greyish mixed with brown, palest on the middle of the breast; belly white; under tail-coverts tinged with rusty yellow."

On the other hand, Baron von Droste Hülshoff writes (Vög. Borkums, pp. 272, 273) as follows:—"I must deny the statement made by Mr. Meves to the effect that this Duck assumes a regular summer plumage. When fresh moulted the plumage is certainly duller on account of the grey edgings to the feathers, and the colours intensify as these margins wear off; but I cannot find any difference sufficient to call this a distinct stage of plumage."

Found throughout Europe in suitable localities, the common or Burrow-Sheldrake ranges south into North Africa, and eastward across the continent of Asia to China and Japan.

In Great Britain it is resident, and breeds from the southern counties of England up to the north of Scotland, but is scarce in the south of England during the nesting-season. Mr. A. G. More states (Ibis, 1865, p. 442) that it is said to be extinct in Dorset, Kent, and Suffolk, but still breeds in North Devon, Somerset, and Norfolk, in the last of which counties it is described as decreasing. According to Mr. Mansel-Pleydell, however, it still breeds on the shores and islands of Poole Harbour, but not so numerously as formerly.

3

Mr. Stevenson has kindly placed at my disposal the proof sheets of his forthcoming 3rd vol. of the 'Birds of Norfolk,' from which I extract the following notes, viz.:—"From local records it would seem that even so late as the commencement of the present century 'Barganders,' or 'Burrow-Ducks,' as they are called in some parts of the county, nested here and there throughout the entire range of sandhills bordering the Norfolk coast, which are broken only by the lofty cliffs that extend some twenty miles between Happisburgh and Weyborne. On the north and west of our extensive sea-board the flat shores of the Wash, between Lynn and Hunstanton, and thence in an easterly direction to Blakeney and Cley, the 'meals' and mussel-'scalps,' bays, creeks, and other tidal inlets have afforded at all seasons the most favourable feeding-grounds.

"In the neighbourhood of Yarmouth the long range of sandhills, locally termed 'marrams' from the grasses which bind the loose soil together, afforded in extensive rabbit-warrens every facility for the peculiar nesting-habits of this species, to which its extermination on that side of the county early in the present century, if not before, is no doubt attributable—since Hunt, in his 'British Ornithology,' published in 1815, remarks, 'they were formerly numerous at Winterton; but being supposed to disturb the rabbits, considerable pains were taken to destroy as many as possible.' And this seems to have been done so effectually that all my enquiries have failed to identify them since, during the breeding-season, with that locality. . . . .

"It would seem, however, that even of late years these birds have not entirely confined their choice of nesting-places to our coast sandhills, provided the accommodation of rabbit's burrows could be obtained elsewhere, as Mr. Robert Wells, of Heacham, informs me that some thirty years ago Sheld Ducks bred upon the heaths at Dersingham and Sandringham, and a pair of wild birds once hatched their young in a rabbit's burrow on his farm at Sedgeford, each of these localities being about three miles distant from the nearest point of the coast. . . . .

"At the present time the few pairs that spend their summer in Norfolk are to be met with only on that portion of our coast which extends from Holme, near Hunstanton, to the harbour at Cley. When staying at Hunstanton in June 1863, I saw single birds of this species on one or two occasions, near Holme Point, passing from the sandhills to their feeding-grounds at low water; and in the same neighbourhood, Mr. Wells informs me, a pair still nested in 1874. At Brancaster, in 1866, Mr. F. Norgate found the remains of egg-shells at the mouth of a rabbit's burrow, apparently those of the Sheld Duck, in the month of July; and young birds, as I learn from Mr. Beverley Leeds, were taken there both in that and succeeding years; and so late as the year 1874 Mr. Wells knew of three pairs that frequented that part of the coast throughout the summer. In 1853 Mr. Thos. Southwell found empty egg-shells of this species on the 'meals' about Wells, and was informed that a pair or two nested there every season; but in August 1872 Mr. J. H. Gurney, jun., ascertained that none had bred there that summer, but was told by a local gunner that in the previous year he had taken an old bird and eleven eggs out of one nest-hole. At Blakeney, in 1872, Mr. J. H. Gurney, jun., found four young birds in the channel early in August, the remains of a much larger brood observed earlier in the season. Another pair were also said to have nested in the same locality; and in May of that year he saw a pair of old birds in the channel at Cley. As late, also, as the summer of 1874 I had reliable information that they still resort to the sandhills on the Blakeney beach, the extreme eastern limit of the Sheld Duck's nesting-range on the Norfolk coast; and this is the more satisfactory

since, prior to the passing of the 'Sea Birds' Preservation Act' in 1869, which affords them protection between the 1st of April and the 1st of August, my notes show several instances of their being killed at Blakeney and Salthouse, as well as on Breydon, in April and May, birds just returning in the perfection of breeding-plumage to their nesting-quarters."

Mr. Cordeaux says of it (Birds of the Humber District, p. 159):—"Still not uncommon, breeding with us, but is not nearly so numerously distributed as was the case fifteen or twenty years since. At that period a pair or two bred in our north marshes, where the last nest I heard of was taken from the joint between two straw-stacks. At that time a pair or two also annually nested on the Lincolnshire coast near Summercotes. In 1867 a pair bred near Cleethorpes, in the neighbourhood of Grimsby, but in private grounds, to which doubtless they owed their safety. The Sheldrake still nests annually, in limited numbers, in the neighbourhood of Spurn.

"In the winter of 1869–70 these Ducks were more than usually plentiful on the Humber and along the Lincolnshire coast, when I saw as many as eight in one day (mainly immature birds) which had been shot along the Humber coast. In the stomach of one was a quantity of fine sand and many small shells of the genus *Buccinum*. The muscular coat of the stomach in this species is remarkably thick and strong, and apparently capable of digesting any tough morsel." In Northumberland and Durham, Mr. Hancock writes (B. of North. and Durh. p. 150), it is "a resident, but not by any means common. It breeds in rabbit-holes on the sandy links by the sea-shore, between Holy Island and Bamborough. It occasionally appears in large flocks in the autumn. I saw on the beach near Newbiggin-by-the-Sea, in October 1871, a flock of forty or fifty: they were chiefly immature."

In Scotland the present species is found widely distributed, and is tolerably common in many parts, but is nearly or altogether wanting in others. Mr. J. A. Harvie-Brown says that it is common in certain suitable localities in the east and north of Sutherland, but absent, so far as he is aware, in the west; and Mr. R. Gray writes (B. of W. of Scotl. p. 362) as follows:—"The Strand-Goose, or Cradh-gheadh of the Hebrideans, is a very common species, though only a summer visitant over the whole of the Long Island. It is also numerous in Skye, Mull, Islay, Jura, Colonsay, Muck, Tyree, and Coll, and, indeed, on nearly all the smaller islands of any consequence in the inner group, where it is found breeding. In North Uist it is often domesticated, and becomes an ornamental addition to the poultry-yard. I saw several pairs in the autumn of 1867 on the farm of Mr. J. Macdonald, at Newton, mixing freely with the common ducks and other poultry. Mr. Macdonald had also in his possession at the time of my visit one or two hybrids between this bird and the domestic Duck, which were at once distinguishable by their curious shape, long legs, and smarter movements. Its principal haunts are on the west side of the outer islands, where there are large tracts of sand and low pasture lands; but even with these attractions the Sheldrake is sometimes not satisfied, as it has been known to betake itself to inland haunts, and settle in burrows on the open heath. In such situations, however, it is never far from water, the Long Island being literally covered with lakes. A few pairs also breed on the east side of North Uist. Mr. Harvie-Brown took a nest on an island in a lake near Loch Maddy on the 10th May 1870; the burrow described nearly a circle; and the eggs, ten in number, which had been sat upon, were found nine feet from the entrance.

"Mr. Graham has favoured me with the following notes on the species as observed by

himself at Iona:—'This handsome and showy bird is common at all times. Its nest is frequently found on the smaller islets in rocky holes, or holes scooped in the sand; and the young broods are often met swimming a little way from the land, convoyed by one or two of the old birds, who show their uneasiness by flying about, rising and alighting just out of shot of the approaching boat. But their anxiety for their little ones is groundless, as the little downy creatures are quite able to take care of themselves. They disperse in all directions, and dive and double under water with surprising agility and cunning, so as to make catching them impossible. Being mud-feeders, we never cared to shoot the Sheldrakes for the pot; for in spite of their fine feathers, they are but foul feeding.'

"On the mainland the Sheldrake is, in many localities, very numerous in the breeding-season, frequenting sandy pasture-lands near the shore, where it generally takes possession of rabbit-holes. Its principal haunts are often wet sands, on which it is not easy to stalk a bird so watchful; but during the time the females are sitting the usual shyness is not so noticeable. I have seen beautiful groups of male birds on the sea off Ardlamont Point, in Argyleshire, and have traced it all along the south-western shores as far as the southern extremity of Wigtonshire. On the eastern coasts of Scotland it is resident all the year, usually remaining on the sandy shores of the larger estuaries, where there is a broad expanse, on which an enemy is easily detected. I have seen large flocks in January and February at the mouth of the Tyne in East Lothian; and Mr. Harvie-Brown informs me that on the banks of the Forth, at Grangemouth, he had at various times seen flocks of twenty or thirty Sheldrakes in the months of October and January." In Shetland it is very rare. Dr. Saxby remarks that one was killed at Balta Sound in 1810, a second about 1850, and a skin of a third was sent to him from the same place in the spring of 1872 without particulars as to the precise locality where the bird had been procured. He adds, however, that it is not improbable that other occurrences have been suffered to pass unnoticed.

In Ireland it is said to have decreased considerably in numbers of late years. Thompson writes (B. of Ireland, iii. p. 66) as follows:—"When visiting Dundrum in 1836, I was told that the Sheldrake still breeds on the extensive marine sandhills there. On the largest of the Copeland Islands they bred annually until the beginning of the present century, when it became inhabited. The chief farmer there, in 1827, imagined that they and the rabbits were contemporaneous, telling me that so long as the rabbits were numerous the Sheldrakes bred regularly; but since the former were all destroyed, the birds ceased to visit the island for that purpose. At the Kinnegar, near Holywood, Belfast Bay, it is said that they annually bred until a late period, when the locality became too much frequented. A pair, however, made the attempt in a rabbit-burrow here in the summer of 1832; but the nest was discovered and robbed of several eggs. Even on the extensive sands of the wild peninsula of the Horn, in Donegal, where, if these birds require the aid of rabbits to burrow for them, there are thousands of such pioneers, I was told in the summer of 1832 that they had ceased to breed. The Sheldrake still continues to resort to the rabbit-holes in the great sandy tract of Magilligan, on the coast of Londonderry. Their eggs are sought after by the neighbouring peasantry, who place them under hens; and when the young are reared, a ready market is found for them among the gentry, by whom they are kept for ornament."

It has not been met with in Greenland or Iceland; but Mr. H. C. Müller obtained a single specimen, a male, in the Færoes in March 1874. In Scandinavia it occurs up to the Varanger fiord, where, Nordvi says, it has been met with once or twice at Karlebotten; and Mr. Collett, in his little work on the ornithology of Norway, writes:—"It has been found breeding as far north as the coastal islands between Tromsö and Hammerfest, its northern range being in about 70°. A young male, shot at Lyngen in May 1872, is preserved in the Tromsö Museum. Occurs sporadically in Finmark up to the Russian frontier, and has been frequently observed in the Varangerfjord. Breeds most abundantly in the coastal region south of the Trondhjemsfjord. On Jæderen, a locality in which it occurs in great numbers, it has sometimes been found nesting in stone fences, at a distance of several miles from the sea-shore. On the 6th June 1872, Mr. Landmark discovered a nest here, built beneath the flooring of a barn; several of the eggs were taken successively; and the female continued laying till the number had reached nineteen. Mr. Irgens, however, tells me that at Borgevær he has often taken as many as twenty eggs from one nest, and once twenty-eight, all laid by the same bird." Nilsson says that it occurs in Sweden, on the west coast, from Southern Skåne up to Nordland, but is most numerous on the coasts of Skåne and Bohuslän. On the Baltic coasts it breeds up at least to the coast of Kalmar, and is said to be common on the Jungfrun island there; but in Södermanland it is only met with on the spring and autumn passages. It arrives in Skåne late in April or early in May, and leaves in August; and Malmlén states that near Gothenburg it arrives in February or March, and leaves late in September or early in October.

Dr. Palmén says that it only occurs on the south-western coasts of Finland, and is but rare. It has been shot on Åland, and has now and again been obtained in Kökarkapell and Kimitto, Korfo, and Nagu parishes, on the south-west coast. It rarely occurs east of Hangö point; but Ekebom had a female shot in Helsinge parish in May 1842. It has also been once obtained near Wasa. It usually appears late in May, but has arrived as early as the end of April. How late it remains in the autumn Dr. Palmén is unaware; but it probably leaves in August. In Russia it does not appear to range far north. Sabanäeff says that it probably occurs in the Tula and Tamboff Governments. In the spring it is found in the Ural, in the Ekaterinburg district, up to 56° N. lat.; and he believes that it nests on the boundaries of the Shadrinsk and Cheliabiansk districts. According to Mr. Taczanowski it is very rare in Poland. There is a male in the Warsaw Museum which was killed on the Pilica; and he on one occasion saw four of these Ducks on the Vistula.

Borggreve says that it is tolerably common in summer on the coasts of North Germany, but seldom occurs in the interior of the country. It has once been obtained in Silesia, once on the Elbe, and once on the Oder. Mr. Hermann Schalow, in his notes on the ornithology of Mark Brandenburg (J. f. O. 1876, p. 13), says:—"We have never observed this Duck in this district, but are told, on good authority, that it is found here. Borggreve states that one was observed near Neustadt; and Dr. Reichenow assures us that he has observed this species in former years, during passage, on the Wannsee, and that the late Dr. Lühder found one egg of this species on the sandy bank of the Hölzernen-See, near Königs Wusterhausen. Dr. Reichenow further informs us that Mr. Walter, who is a careful observer, observed two pairs of this Duck on the Döllensee, near Döllenkrug, in the vicinity of the Reyersdorfer See, Kreis Templin, in 1875.

The statement of Vangerow that the common Sheldrake has been found breeding near Königsberg, in the Neumark, cannot be depended on, as this gentleman is notoriously untrustworthy." The present species is said by Collin to breed commonly in some parts of Denmark, especially on the west coast of the Duchies, on Amrom and Sylt; and it is there a resident. It breeds in Holland, but nowhere in great numbers, as, for instance, at Walcheren, the Hoek van Holland, Wassenaar, Katwijk, Wijk op Zee, Texel, and the island of Rottum. Mr. Durnford, in his Notes on North-Frisian ornithology (Ibis, 1874, p. 403), writes that it is "common everywhere, both on the islands and mainland, breeding on the former in a semidomesticated state. The natives make artificial burrows in the sand hillocks, and cut a hole in the turf over the passage, covering it with a sod, so as to disclose the nest when eggs are required. Several females lay indiscriminately in the same nest. They are very tame, and suffer themselves to be taken by hand while sitting. Each burrow has two openings, and is made circular in shape. There are sometimes as many as a dozen or fifteen nests in one hillock within the compass of eight or nine yards. The eggs are taken up to the 18th June, after which they allow the birds to incubate; but they never rob a nest of all the eggs, leaving one or two to avoid driving away the birds. Each person in the village generally has a burrow; and they are scrupulously honest in not taking each other's eggs. The female always covers her eggs with down before leaving the nest." On the coasts of Belgium it occurs in winter and at the seasons of passage, but is not common; and in the interior it is extremely rare. MM. Degland and Gerbe write that in some parts of France it is found at all seasons of the year, whereas in others it occurs on passage. It breeds near Havre, at the mouth of the Seine, on the shores of Orches, sometimes near Boulogne, and regularly in the south of France, but never in any great numbers. According to M. Lacroix it is resident in Aude and Hérault, and of accidental occurrence, usually in the winter, in the Pyrénées orientales. In Portugal it is said to be, as a rule, rather rare than otherwise; but Professor Barboza du Bocage states that it is not uncommon at Ribatejo; and in Spain it is said to occur more numerously than the Ruddy Sheldrake. Colonel Irby states that it is a regular maritime species, and is found on the coast near the mouth of the Guadalquivir, where it doubtless breeds.

In Italy the present species is somewhat rare. Salvadori says that it is very rare in North Italy, and he does not believe that it occurs in Piedmont. In Lombardy and Liguria it is rare or accidental, but not so rare in Venetia. Savi says that is rare in Tuscany; and Salvadori has occasionally seen specimens in the market at Rome. Costa records it as of tolerably frequent occurrence near Naples; and the shooters assured him that it is found not unfrequently in the marshes near Brindisi, in Southern Italy. In Sardinia it is not uncommon in winter; and Salvadori remarks that he has frequently seen small parties of four or five individuals passing to and from Lake Scaffa and the sea, and adds that he believes they occasionally remain there to breed. In Malta, according to Mr. C. A. Wright, they arrive late in October or early in November, and a few pass throughout the winter. In South Germany the common Sheldrake is not common, and, Dr. Fritsch says (J. f. O. 1872, p. 368), is "extremely rare in Bohemia. Herr Hromádko obtained a male from the Ceperka pond, near Pardubic, in April 1846; and Herr Fierlinger received one from Hirschberg in 1858. Mr. Palliardi states that it is occasionally exposed for sale in the Prague market." In Transylvania it is, Messrs. Danford and Harvie-Brown

write (Ibis, 1875, p. 427), "very rare, and only to be met with during hard winters. Herr Buda Elek shot one in 1840 on the Strell; and it is mentioned as having occurred in the Mezöség by Herr Ottó, on the authority of Baron Kemény Béla, from whom, however, Herr Stetter received only a description." It is not uncommon on the Southern Danube, on the coasts of the Black Sea, and in Turkey, but by no means so numerous as the Ruddy Sheldrake in the latter country; and Dr. Th. Krüper says that it is only occasionally met with in Greece. There are two examples in the Museum at Athens, one obtained on the 8th of April, and the other in January, in Attica. It is stated by Colonel Drummond-Hay to be common in winter in Macedonia. According to Dr. Krüper it occurs in Asia Minor in winter; but Canon Tristram does not appear to have met with it in Palestine. In North Africa it is tolerably common, but does not range far south. Von Heuglin says that it is common in Lower Egypt, and he saw it in flocks and pairs in the Fayoom in May and early in June; in the winter it is even commoner than in the summer; but he never observed it south of the Fayoom. Captain Shelley writes (B. of Egypt, p. 281):—"The present species appears to be rarer than the Ruddy Sheldrake; for it is not so often found in the market at Alexandria. I have met with it on two occasions—once near Sioot, and once in the Fayoom." It is found in Algeria, where, however, it is said to be less numerous than the Ruddy Sheldrake. Canon Tristram met with a few at Tuggurt, but did not observe it elsewhere until he arrived at Djendeli; and Favier says that near Tangier it occurs between November and February, but is not regular in its appearance.

In Asia it occurs right across the continent. Pallas and Eichwald record it from the Caspian; and Mr. A. O. Hume writes (Stray Feathers, i. p. 260) that he only noticed it "about the Muncher lake, where numbers were feeding along the banks on the northern and western shores. They were very wary; and though I stalked many of them, and got within a hundred and a hundred and fifty yards, I failed to secure a specimen. In Upper India, on similar large inland pieces of water, as low down as Cawnpore and Fyzabad, a few are generally to be seen during the cold season." Dr. Jerdon writes (B. of India, ii. p. 794) that it is "not common in any part of India, and is unknown in the south. It has been occasionally procured in the Calcutta bazaar by Mr. Blyth, is sometimes met with in the N.W. Provinces, in Sindh, and at the foot of the Himalayas, and has been observed by Mr. Simson, B.C.S., in Eastern Bengal."

Neither Von Middendorff nor Von Schrenck appear to have met with this species in Siberia; and Dr. G. Radde only found it in the Tarei-nor and the saline steppes of Dauria. He first observed them at the Tarei-nor on the 4th April, and saw them paired on the 28th of that month; and some remained as late as the 2nd of September. According to Père David (Ois. de la Chine, p. 497), it visits China regularly in winter, but only in small numbers. Late in the autumn a few are seen near Takoo; and he observed it late in the spring on the sandy plateaux of Mongolia, where he believes that it not unfrequently breeds. Mr. Swinhoe records it from Amoy, Takoo, Pekin, and the island of Formosa; and it is said by Dr. Radde and Von Siebold to occur in Japan.

In general habits, except as regards its nidification, the present species bears a good deal of resemblance to the Mallard, and in its flight resembles the flight of that species more, perhaps, than any other of the Ducks; but it walks with rather less ease, though more gracefully, than the domestic Duck. It appears to affect the sea-coast, being seldom met with far from salt water,

and usually, during the breeding-season, on some of the islands close to the coast. It is, as a rule, a somewhat shy and cautious bird, except in places where it is carefully protected; and there it becomes so tame that it is almost in a state of semidomestication. It is very sociable, seldom seen alone, and usually collects together in colonies for the purposes of nidification. Sometimes, however, during the pairing-season, the males will fight for the possession of the females; but otherwise they dwell together in such amity that several pairs will inhabit portions of the same burrow. The call-note of the male bird is a deep *korr*, *korr*; but the female utters a loud quacking sound, like that of many other Ducks.

The food of this Duck consists of vegetable matter with some small admixture of insects, small crustaceans, and worms; and Naumann states that it will sometimes eat small fish and fish-spawn. It appears to feed chiefly near the shore in shallow water, frequently reaching down with upturned body, like many of the freshwater Ducks; and it also frequents places left almost bare by the receding tide, where it collects its food amongst what is left by the water as it ebbs. In confinement it will readily feed on grain of various kinds, cooked potatoes, bread, turnips, &c. Mr. Collett writes to me as follows:—"In the stomachs of males shot on Jæderen I found:—in one almost exclusively the fragments of plants (stems of Gramineæ) and a quantity of gravel; in another, seeds and vegetable matter, fragments of a *Carabus nitens*, and the larvæ of *Eristalis*." And Thompson states, "On examination of the gizzards of nine birds killed in Belfast Bay, Strangford Lough, and Dundrum Bay, in winter weather of all kinds, and in the months of March, April, and July, I found them all to contain a number of minute univalve shells, in addition to which was only sand or gravel. A few of them from the two first-named localities were entirely filled with *Paludina muriatica*, Lam., a most abundant species. Although they exhibited 'shell-fish' only, food of various kinds, vegetable and animal, was abundant where they were obtained. The tenth individual, shot in Belfast Bay in February 1849, during mild weather, had its stomach wholly filled with minute mollusca—*Montacuta purpurea* (in profusion), *Skenea depressa*, and *Paludina muriatica* (few of these). Its crop was full of the two former species, chiefly of very small *Skeneæ*, it alone containing not less than nine thousand of these shell-fish. The stomach produced still more, so that 20,000 of these minute mollusca were estimated to be in the bird at the same time. To give an idea of their size, the *Skenea* is about that of clover-seed, or one eighteenth of an inch in diameter; the *Montacuta*, when large, is one twelfth of an inch broad. The bird was very fat, as might be expected from such nutritious diet—the same on which the grey mullet (*Mugil chelo*) attains a great size in this bay."

The present species is somewhat peculiar in its nesting-habits; for it always deposits its eggs in a burrow or hole, most frequently in a rabbit-burrow, but sometimes in that of a fox or a badger; and, curiously enough, it appears to inhabit the burrow whilst it is tenanted by its original owner, the Duck and the fox or badger appearing to dwell together in amity. Von Negelein, as quoted by Naumann, vouches for the accuracy of these statements as to the Sheldrake inhabiting the same hole as the fox and the badger; and Bekker and Lembke also cite similar instances. In some localities, as, for instance, on the island of Sylt, where this Duck is in a state of semidomestication, artificial burrows are made by the peasants, and are tenanted by the Sheldrake; and Naumann (Naturg. Vög. Deutschl. xi. p. 562) gives a drawing of one of these burrows with twelve nesting-places and only one entrance. Each of the nesting-places is

covered with a sod made like a lid, but quite close, so that the light cannot penetrate into the interior, and fashioned so that it can be easily removed and the contents of the nest examined. In this manner the eggs are regularly collected by the peasants (no nest being entirely cleared of eggs), and the Duck still continues to lay, until a considerable number of eggs have been taken, when she is allowed to sit, and hatches out those which are left. Naumann says that some of the peasants, who own a considerable number of nests, will collect as many as twenty or thirty eggs per diem, and are able to do this for a couple of weeks. As soon as the birds begin to incubate, about half the down, which is nearly as valuable as that of the Eider, is taken, and forms a by no means trifling source of profit to the owner of the burrows. The eggs are said to be very good for eating, but have a rather strong flavour.

Incubation lasts four weeks; and so soon as the young are hatched they leave the nest and are conducted by their parents to the sea, where they remain until full-grown.

The eggs of this Duck (from seven to twelve, occasionally sixteen in number) are considerably larger than those of the Mallard, and are yellowish white or ivory-white in colour, with a faint greenish tinge inside, and are very smooth and polished in grain. Naumann states that if, as is done in Sylt, the first six eggs are left and all those subsequently laid are taken, the bird will lay as many as from twenty to thirty eggs, but if none are ever taken it never lays more than sixteen.

Mr. Stevenson, referring to the provincial name of "Bargander" or "Burgander," by which this Duck is known in Norfolk, says that it is presumably a contraction of burrow-gander; but it appears to me just as probable that it is derived from its German name "Bergente," by which this bird is well known all along the German coasts.

The specimens figured are the adult male and the young bird in down above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂, *b*, ♀. Albania, winter (*Hanbury Barclay*). *c*, ♂. Nordland, Norway, spring (*R. Collett*). *d*, *pull.* Hitteren, Trondhjem, Norway, June 25th, 1870 (*R. Collett*).



RUDDY SHELDRAKE.
TADORNA CASARCA.

TADORNA CASARCA.

(RUDDY SHELDRAKE.)

Anas casarca, Linn. Syst. Nat. iii. App. p. 224 (1768).
Anas rutila, Pall. Nov. Com. Petrop. xiv. p. 579 (1770).
Anas casarka, S. G. Gmel. Reise, ii. p. 182 (1774).
Anser casarca (L.), Vieill. Nouv. Dict. xxiii. p. 341 (1818).
Tadorna rutila (Pall.), Boie, Isis, 1822, p. 563.
Casarca rutila (Pall.), Bp. Comp. List, p. 56 (1838).
Vulpanser rutila (Pall.), Keys. & Blas. Wirbelth. Eur. p. 84 (1840).
Tadorna casarca, Macg. Man. Brit. Orn. ii. p. 163 (1842).
Anas aurantia, Marsil. Danub. v. t. 54, fide Von Heugl. Orn. N.O.-Afr. ii. p. 1307 (1873).

Tadorne casarca, French; *Pato tarro*, Spanish; *Wuz-Abu-Faroa*, Arabic; *Bou-ha*, Moorish; *Rost-Ente, rothe Pfeifente*, German; *Krasnaya Ootka*, Russian; *Kermesi Erdek*, Turkish.

Figuræ notabiles.

Werner, Atlas, *Palmipèdes*, pl. 37; Kjærb. Orn. Dan. taf. 48; Fritsch, Vög. Eur. taf. 47. fig. 9; Naumann, Vög. Deutschl. taf. 299; Sundevall, Svensk. Fogl. pl. 83. fig. 1; Gould, B. of Eur. pl. 358; id. B. of G. Brit. v. pl. 12; Savigny, Desc. de l'Egypte, pl. 10. fig. 1.

♂ *ad.* capite ochraceo, mento et nuchâ ferrugineo tinctis: collo ochrascenti-ferrugineo, in parte imâ nigro cincto: dorso, collo imo, pectore et corpore subtùs ferrugineis, scapularibus et hypochondriis pallidioribus: uropygio ochrascenti-ferrugineo, nigro-fusco vermiculato: remigibus et rectricibus cum supracaudalibus nigris, remigibus secundariis extùs viridi et purpureo nitentibus speculum formantibus: secundariis intimis ochrascente ferrugineo, in pogonio interno cinereo tinctis: tectricibus alarum albis: rostro et pedibus nigricantibus: iride fuscâ.

♀ *ad.* mari similis sed ubique pallidior et sordidior, capite albicantiore nec collo nigro cincto.

Adult Male (Athens). Head creamy yellow, on the chin and nape gradually darkening into yellowish red; neck yellowish red, encircled below by a black ring, below which the lower neck, back, breast, and underparts are rich foxy red, the flanks and the scapulars being paler in colour; rump yellowish red, vermiculated with black; quills, tail, and tail-coverts black, secondaries glossed with green and purple on the outer web, forming a speculum, inner secondaries yellowish red, tinged with ashy grey on the inner web; wing-coverts white; bill and legs blackish; iris brown. Total length about 24 inches, culmen 1·75, wing 14·0, tail 5·5, tarsus 2·5.

Adult Female (Seville, Spain). Resembles the male, except that the head is whiter, the collar round the neck is wanting, and the general tone of coloration is lighter.

Young (Sarepta). Resembles the female, but is duller in colour, the inner secondaries and scapulars are brown, marked with yellowish red, and the white on the wings is washed or soiled with grey.

Nestling in down (Sarepta). Is undistinguishable from the young of the common Sheldrake, except that the brown markings on the upper parts are paler.

The present species inhabits Southern and Eastern Europe (being rarer in the west), North Africa, and is met with in Asia as far east as Japan. With us in Great Britain it is only known as a rare straggler; and very probably some, if not most of the specimens recorded as having been obtained, were birds escaped from confinement, as it is not unfrequently kept in a state of semidomestication. The first recorded occurrence appears to be that of one obtained near Blandford, Dorset, in the winter of 1776; Selby, who refers (Brit. Orn. ii. p. 293) to this specimen, adds that he possesses a specimen shot in the south of England; Yarrell speaks of one obtained near Orford, Suffolk, in January 1834; and one is said by Hele to have been seen near Blackstakes, in Suffolk, in 1864. In Scotland it has occurred twice, once at Sanday, Orkney, in October 1831, and once in Caithness-shire; and it has twice been recorded from Ireland. Thompson states (B. of Irel. iii. p. 65) that one was shot on the Murrough of Wicklow on the 7th July, 1847; and Mr. Blake-Knox says (Zool. 1870, p. 2195) that one was obtained near Tralee, county Kerry, on the 17th August, 1869. Elsewhere in Northern Europe it is a rare straggler. According to Nilsson it has once occurred in Sweden, a male, which was shot on the coast off Stockholm on the 22nd May, 1854, being in the Stockholm Museum; and Dr. Palmén states (Finl. Fogl. ii. p. 372) that a reliable man shot a duck on the Ladoga Lake, in Russia, which, from his description, must have been a Ruddy Sheldrake. It is, however, stated by Sabanäeff not to occur on the Volga above the meadow lands in Samara; but below that it is common, and in the district of Astrachan it breeds numerously in the steppes. In Germany it is recorded by Naumann as a rare straggler, and has, he adds, "been met with in Silesia, and has occurred on the Bodensee;" but I find no record of its having been obtained in North Germany. According to Kjærbölling it has once occurred in Denmark, one having been shot at Bornholm. I do not find any record of its having been met with in Holland and Belgium; and Degland and Gerbe do not cite any instance of its occurrence in France. It does not seem to have been met with in Portugal; but in Spain, Colonel Irby writes (Orn. Str. Gibr. p. 197), it is said to nest near the mouth of the Guadalquivir, and there is no doubt that it does breed somewhere north of the Straits. He never met with it alive, but has seen a few in the Seville market in spring and late in the autumn. Passing eastward, again, I find it recorded as being very rare in Italy: two specimens are recorded as having been obtained in Tuscany; and one was obtained near Naples on the 22nd March, 1854. In Sicily it is, according to Doderlein, also rare; but he states that examples have been procured at Lentini and elsewhere.

Mr. C. A. Wright records the occurrence of two specimens at Malta, and says that he saw a third example in a collection of Maltese birds.

In Southern Germany it is likewise rare. The Ritter von Tschusi-Schmidhofen informs me that, according to Dr. A. Fritsch, a pair were seen early in the month of August near Frauenberg, and the male was killed. In Hungary, according to Wagner, one was killed on the Sajo in the spring; and Stetter has once observed it in Siebenbürgen on passage. In Greece it is found during the summer, and breeds, Dr. Krüper says, on the Langada lakes in Macedonia; and the old males may be seen about the fields, apparently very tame. He saw the young birds on the shores of the lake. The specimens in the Athens Museum were obtained in the months of

January and December; and a male was killed at the Phalerus on the 19th February, 1867. It is, however, as a rule, a rare species in Greece. Lord Lilford also speaks of it as being very rare at Corfu. In Turkey, however, it is much commoner. Messrs. Elwes and Buckley say (Ibis, 1870, p. 339) that they only met with it in the Dobrudscha, where it was very common; and Dr. Otto Finsch states that it is numerous on the Lower Danube and the smaller rivers of Bulgaria. In Southern Russia it is, Professor von Nordmann states, common, arriving in pairs about the latter end of March, remaining to breed, and leaving again in the autumn. Ménétries records it from the Caucasus, where, he states, it is tolerably common between Bakou and Saliane; and it is said to be common near Smyrna, where Strickland saw it exposed for sale. Canon Tristram met with it in winter near the Dead Sea, in Palestine; and he also obtained its eggs in May, in a cliff in Northern Galilee, among some Griffons' nests. It inhabits Northern Africa; and Von Heuglin writes (Orn. N.O.-Afr. p. 1308) that he "observed it from September to May in Lower Egypt, in flocks of from five to twenty-five individuals, either on the lagoons at the mouth of the Nile or on the ponds and lakes at the edge of the desert, and on the bitter lakes. It is also at times common at Birket el Quarn, in the Fayoom." He adds that he thinks it not improbable that it breeds in the Delta, Fayoom, and the Libyan desert. Captain Shelley met with it on Lake Menzaleh; and Brehm and Vierthaler state that it is found on the Blue Nile, the correctness of which statement Von Heuglin doubts. In North-west Africa it is recorded by Loche as occurring in Algeria at Boghar, Laghouat, and even in the Sahara; and Mr. Salvin states that it is numerous in all the salt lakes of the elevated plains. Colonel Irby writes (Orn. Str. Gibr. p. 197) that he has repeatedly seen them exposed for sale in Tangier, and that, according to Favier, "this species is resident at no great distance from Tangier; some are migratory, crossing to Europe during April and May, returning in September and October. In the immediate vicinity of Tangier it is scarce, and only observed in small lots on the lakes and large rivers. Often they entirely, though irregularly, disappear for months at a time, probably going to marshes not very far off. The months during which they are usually absent are February, March, and June."

To the eastward this Duck is found as far as China and Japan. Mr. Blanford says that he observed it near Bam and on Shiráz lake, in Southern Persia; De Filippi saw it in North-western Persia; and Major St. John states that it is very numerous in Southern Persia, where it breeds. In India the present species is very generally distributed, during the winter season, in all parts of the country where suitable localities are found. Mr. A. O. Hume states that in Sindh it is so numerous on the inland waters that he frequently saw fifty in a single day. It does not appear to breed in India proper; but Dr. Henderson met with it in large numbers in Yarkand, where it breeds commonly. He says (Lahore to Yarkand, p. 296) that it was first noticed at the hot springs above Gokra, at an elevation of 16,000 feet; there they were seen on small lakes at the salt-plains, and all along the Karakash river. Severtzoff records it as found throughout Turkestan, where it breeds; and it is stated by Dr. G. Radde (Reis. im Süd. von Ost-Sib. ii. p. 362) to be found on Lake Baikal, but only at the south-western end, and he did not observe it above the island of Olchon. In Southern Transbaikalia, especially in the steppe country, it was not rare. He observed the first at Lake Baikal on the 4th April; and by the 19th September almost all had left. Père David says that it is tolerably common near Pekin,

and abundant in Mongolia, where it is never shot, and where it nests in the precipitous rocks. Temminck and Schlegel record it from Japan; and Mr. Swinhoe states that during the winter it is common in China on inland waters, but rare on the coast.

In its habits the present species is said to have as much, if not more, affinity with the Geese than with the true Ducks. It walks like a Goose, with ease, and grazes in the cornfields on the tender shoots, and it feeds on grain, seeds of various kinds, and also, to some extent, on fish, worms, frogs, &c. It is shy, and not easy of approach, keeping in open places, where it can see an intruder from a distance and take flight in good time. Von Heuglin says that it is seldom seen in company with other Ducks, and is usually found during the day-time on the fields or even on the true desert, and in the morning and evening it visits the lakes and pools. It has also much in common with the common Sheldrake in its general habits; and like that species it frequently nests in a hole in the ground, but also in hollow trees and in clefts in cliffs. Messrs. Elwes and Buckley say (*l. c.*) that in the Dobrudscha the nest is very difficult to find, being always in a hole, sometimes in the middle of a corn-field, and the male bird keeps watch near by to call the female off her eggs when any one approaches. In a letter received from the collector of Mr. Möschler in Southern Russia, a copy of which has been forwarded to me by the latter gentleman, he says:—"The Ruddy Sheldrake breeds here in hollow trees; and the male perches on a branch of the same tree in which the female is sitting, and gives warning in case of danger; and the female leaves her eggs when warned, and both birds fly round. Should any one approach with a dog, the Ducks will fly close to the latter, and can then be shot; but if once missed they are careful to keep well out of range." In Dauria, according to Dr. Dybowski, it breeds in hollow trees, in hollow fallen logs, and in clefts of the rocks, as well as in deserted nests of birds of prey, and deposits from twelve to sixteen eggs about the middle of May. Mr. Salvin found it breeding in Algeria, and Canon Tristram in Palestine, in clefts in the cliffs. The nest itself consists merely of down plucked from the breast of the bird, which forms a soft couch for the eggs. These are not to be distinguished from those of the common Sheldrake, either in size or colour, being pale creamy in colour, the surface of the shell being very smooth.

In India there is a curious legend respecting the present species, arising probably from its habit of calling to its mate at intervals during the night. Dr. Jerdon, referring to this, says "the Hindoos have a legend that two lovers for some indiscretion were transformed into Braminy Ducks, that they are condemned to pass the night apart from each other on opposite banks of the river, and that all night long each, in its turn, asks its mate if it shall come across, but the question is always met in the negative—'Chakwa, shall I come?' 'No, Chakwi.' 'Chakwi, shall I come?' 'No, Chakwa.'" It is also supposed in some parts of India that whoever kills one of these Ducks will be doomed to perpetual celibacy; hence they are there seldom molested, at least by the natives.

The call-note of this species is a clear trumpet sound, more resembling the note of a Goose than of a Duck; and when scattered about in the fields they frequently call to each other.

The specimens figured are an adult male, from Athens, in the British Museum, and a female, from Spain, in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *juv.* Sarepta (*Möschler*). *b*, ♀ *ad.* Seville, Spain (*Llanos*). *c*, *pull.* Southern Volga. *d*, *pull.* Astrachan (*Möschler*).

E Mus. Brit. Reg.

a, ♂ *ad.* Athens. *b*, ♀. Nepâl (*B. H. Hodgson*). *c*, *juv.* N. Asia.

E Mus. H. J. Elwes.

a, ♂. Calcutta, December 1868 (*Dr. Anderson*).

E Mus. H. B. Tristram.

a, *b*, *pulli.* Aïn Dadja, June 1856 (*H. B. T.*).

E Mus. Howard Saunders.

a, ♂. Cote de Doñana, near Seville, Spain, 1869.

Genus ANAS.

Anas, Brisson, Orn. vi. p. 307 (1760).
Fuligula apud Gould, B. of Eur. iv. p. 373 (1837).
Querquedula apud Bonaparte, Comp. List, p. 57 (1838).
Dafila apud Eyton, Monogr. Anat. p. 114 (1838).
Marmaronetta apud Bonaparte, Compt. Rend. xliii. p. 650 (1856).
Marmonetta apud Reichenbach, fide G. R. Gray, Hand-l. of B. iii. p. 84 (1871).
Chaulelasmus apud G. R. Gray, ut suprà (1871).

This genus is very widely distributed, being found in the Palæarctic, Ethiopian, Oriental, Australian, Nearctic, and Neotropical Regions, only two species, however, being met with in the Western Palæarctic Region; and one of these, *Anas marmorata*, I include with great doubt in this genus.

The species belonging to the genus *Anas* frequent rivers, lakes, marshes, and, to some extent, also the sea-coast. They swim with ease, and are able to dive, but do not, as a rule, do so unless pursued. They feed on the fleshy portions and roots of aquatic plants, which they obtain by reaching down in shallow water, the body being held in a perpendicular position, the tail up in the air; they also feed on seeds, mollusca, small fish, frogs, and aquatic insects. On land they walk, and even run, with tolerable ease. They place their nest on the ground, constructing it of sedges, grasses, &c., and lining it with down, and deposit numerous pale greenish-grey eggs.

Anas boschas, the type of the genus, has the bill a trifle longer than the head, higher than broad at the base, gradually depressed, becoming a little broader at the end; the dorsal line sloping to beyond the nostrils, then nearly straight, the margins broadly ovate, decurved; the gape-line nearly straight; the ends of the lamellæ just showing along the edge of the upper mandible; nostrils oval, subbasal; trachea of nearly uniform width, the lower larynx with a transversely oblong bony expansion forming a rounded sac on the left side; wings moderate, pointed, the first two quills longest, inner secondaries elongated, rather pointed; tail short, much rounded; legs short, tibia bare for a short distance, tarsus short, compressed, anteriorly scutellate; hind toe small, with a narrow membrane, anterior toes moderate, interdigital membranes full, the inner toe rather shorter than the outer one; claws small, compressed, arched, obtuse.



MALLARD.

ANAS BOSCHAS.

ANAS BOSCHAS.

(MALLARD.)

Anas fera, Briss. Orn. vi. p. 318 (1760).
Anas boschas, Linn. Nat. Syst. i. p. 205 (1766).
Anas subboschas, Brehm, Naumannia, p. 297 (1855).
Anas archiboschas, Brehm, Naumannia, p. 297 (1855).

Wild Duck, *Mallard*, English; *Lacha-chinn-naine*, *Lacha-rhiach*, Gaelic; *Canard sauvage*, French; *Pato real*, Spanish (*Colvert*, Valencian); *Pato real*, *Adem*, Portuguese; *El Bourk*, Tangerine; *Germano real*, Italian; *Culuvert* (♂), *Borca* (♀), Maltese; *Stockente*, German; *Wilde Aant*, Dutch; *Gråand*, *Moseand*, *Stokand*, Danish; *Stokönd*, *Hudsönd* (partim), *Grönhöfdi* (mas), *Gráönd* (fœmina), Icelandic; *Stokand*, Norwegian; *Gräsand*, Swedish; *Kräkushka*, *Seruha*, *Ootka*, Russian.

Figuræ notabiles.

Buffon, Pl. Enl. pls. 776, 777; Naumann, Vög. Deutschl. taf. 300. figs. 1–4; Gray and Mitchell, Gen. B. iii. pl. 167. fig. 8; Gould, B. of Eur. pl. 361; Wilson, Am. Orn. viii. pl. 70. fig. 7; Audubon, B. of N. Am. vi. pl. 385.

♂ *ad.* pileo colloque undique nitidè viridibus, cyaneo-viridi nitentibus: torque collari albo: dorso brunneo, collo imo argentescenti-albo minutissimè vermiculato, dorsi plumis latè ochrascenti-brunneo marginatis, uropygio et supracaudalibus recurvatis nigricantibus viridi lavatis: scapularibus et secundariis intimis et tectricibus alarum minoribus cinerascenti-albis, brunneo minutissimè transvermiculatis: alis pallidè cinerascenti-brunneis, tectricibus majoribus velutino-nigro terminatis, subterminaliter albo notatis, fasciam alarem conspicuam formantibus, secundariis minoribus purpurascenti-violaceis, albo terminatis et subterminaliter velutino-nigro fasciatis, secundariis longioribus extimis castaneo lavatis et nigro transvermiculatis: caudâ albâ, rectricibus centralibus cinerascenti-brunneo lavatis: pectore superiore brunnescenti-castaneo: corpore reliquo subtùs albicante, brunneo minutissimè transvermiculato: subcaudalibus velutino-nigris, basaliter albicantibus: subalaribus et axillaribus purè albis: rostro luteo-viridi: ungue nigro: pedibus aurantiacis: iride brunneâ.

♂ *ad. æst.* vix a fœminâ distinguendus.

♀ *ad.* omninò diversa: suprà brunnea, plumis medialiter fulvo fasciatis et marginatis: pileo et collo undique fulvescentibus nigro minutè striolatis: gutture fulvescenti-albo: subtùs fulvescenti-ochracea, brunneo irregulariter fasciata et medialiter striata et maculata: pectore vix rufescente: tectricibus alarum cinerascentibus, majoribus subterminaliter albo fasciatis et velutino-nigro terminatis: primariis et secundariis minimis ut in mari coloratis, intimis brunneis viridi lavatis extùs fulvescente marginatis et medialiter fasciatis; caudâ brunneâ, rectricibus latè fulvescente marginatis et medialiter fasciatis, subalaribus et axillaribus albis: rostro sordide olivaceo: pedibus aurantiacis: iride brunneâ.

Adult Male (Uddevalla, Sweden, March). Forehead and crown blackish green; head and upper parts of

the neck deep vivid green, changing into rich dark violet; round the middle of the neck a white ring not quite meeting behind; fore part of the back and scapulars grey, minutely barred with brown, middle of the back dark umber-brown, margined with dull fulvous; rump very dark blackish green, with violet reflections, the four recurved feathers in the tail being similarly coloured; tail pale brownish grey, broadly edged with white; quills brownish grey, edged with dirty greyish white; all the short secondary quills, with the outer webs, rich purplish blue, with bottle-green reflections, and at the tip a black bar succeeded by white; inner secondaries with the outer edge dark brown, otherwise grey, minutely barred with brown; fore part of the breast rich chestnut-red; lower part of the breast, sides, and abdomen greyish white, narrowly barred with dark brown, the flanks being purest in colour; under tail-coverts black, glossed with purplish blue; axillaries and under wing-coverts white; beak dark greenish, lighter towards the base; under mandible reddish yellow at the base; legs and feet reddish orange; iris brown. Total length 23 inches, culmen 2·6, wing 10·5, tail 4·0, tarsus 1·85.

Male in summer. Closely resembles the female, being merely somewhat darker in colour. This plumage is donned by degrees early in June; and in August the full rich winter dress is again resumed.

Adult Female (Harting, Sussex). Head and neck blackish brown, the feathers more or less margined with reddish brown and dull yellowish brown, giving those parts the appearance of being dull brown, striated with dark blackish brown; back and upper parts generally dark dusky brown, the feathers edged with pale reddish brown; wing and speculum as in the male, but duller in colour; middle tail-feathers straight, and similar in colour to the others; throat and fore part of the neck dull brownish white, washed with yellowish; rest of the underparts yellowish grey, streaked and spotted with dull brown.

The range of the Mallard is very extensive, as it occurs throughout Europe, Northern Africa, Asia from the far north down into China and Japan, and North America as far south as Mexico. In Great Britain it is found generally distributed throughout the country, more commonly, however, in the north than in the south during the summer. In Ireland it is, Mr. Thompson writes, common around the coast, on freshwater lakes, &c., and is indigenous. Respecting its abundance in Scotland Mr. Robert Gray writes that "in almost every flock of wild-fowl attractive to the sportsman in our western counties, the Mallard is by far the commonest species of Duck to be met with. It is very abundant on all the islands of both the inner and outer group, and also on the whole of the western mainland from north to south. On the larger sheets of water—such as Loch Lomond and Loch Awe, Loch Shiel, Loch Maree, and Loch Assynt—vast numbers breed and collect together after the broods are able to fly, until their principal haunts become overcrowded, when they break up into scattered groups, betaking themselves in open weather to moorland marshes, or to the sea-shore when the snow and ice compel them to seek a change. Immense numbers also congregate on the retired parts of some rivers, where, especially in protected grounds, they find a safe refuge. In walking through the policies of Duff House, in Banffshire, I was much struck with the extraordinary flights of Mallards at a particular pool in the Deveron. There must have been many hundreds together in the pool; and on being approached, they merely swam or flew to the other side of the river. I have seen similar flocks on the lake of Ochtertyre, in Perthshire, and other secluded lochs within private policies throughout both the eastern and western counties of Scotland. The most remarkable assemblage of Mallards I ever saw was on the pond at Douglas Castle, Lanarkshire, in the spring of 1870. The birds were so tame as to allow even strangers to approach within six or eight yards of the

bank where they sat preening their feathers, before plunging into the water. Mr. Dugald Macdonald has informed me that he has seen hundreds of Mallards on a mill-dam near Monymusk, in Aberdeenshire, which were so tame as to come at the call of a miller who fed them. This man no sooner made his appearance, and uttered the peculiar whistle which they were accustomed to hear, than the Ducks came flying in from all parts of the pond and surrounding marshes, and alighted within a few yards of where he stood throwing out handfuls of corn. No stranger, however, could ever prevail on them to approach."

In Greenland it occurs, and is included by Professor Reinhardt in his list of birds observed in that country; and in Iceland it is recorded by Professor Newton in Mr. Baring Gould's work as "very common, arriving, according to Faber, the third week in April, and departing in the beginning of October. Throughout Scandinavia it is tolerably numerous everywhere up into Lapland; and Mr. Collett writes that "it breeds commonly throughout Norway up to Tromsö, but is only found in small numbers in Ostfinmark. South of the Trondhjemsfiord it is generally met with breeding on the fresh water at all altitudes, but also on the coast down to the Hval islands. It is generally to be met with wintering on the south coasts, from the Trondhjemsfiord down to Bohuslehn." Dresser saw it everywhere along the Swedish coast, and especially on the small inland lakes, up into Lapland, and equally common in Finland, it being one of the commonest species near Uleåborg, and the first Duck to commence breeding there. In every part of Finland which he visited he found the Mallard numerous; and Messrs. Alston and Harvie Brown record it as equally common near Archangel. Throughout Northern and Central Russia it occurs in almost all suitable localities; and Mr. Sabanäeff writes that it is very common in the Ural, especially on the lakes in the black-earth districts. In Poland, the Baltic Provinces, and throughout Northern Germany, it is found during the breeding-season; and numbers remain there throughout the winter. In Denmark it is, Mr. Benzon informs us, common everywhere on the freshwater lakes and streams; and in Holland, Belgium, and the north of France, it is numerous during the winter season, some few remaining to breed in those countries. Professor Barboza du Bocage includes it in his list of the birds of Portugal; and Mr. Howard Saunders and Major Irby both speak of it as very numerous and universally distributed throughout Spain, the former stating that it breeds abundantly in the "Marisma" and "Cotos."

Bailly finds it numerous during the seasons of migration in Savoy, a few remaining to breed; and other authors agree that it is common throughout Italy and in Sicily, in the latter country, according to Mr. Howard Saunders, the commonest species of Duck found breeding there. Mr. C. A. Wright writes that it is "not uncommon on the shores of Malta in November and December, a few appearing again in March." Captain Sperling found it in Albania in the winter, and also obtained the eggs there early in June; and Lord Lilford, writing on the birds of the Ionian Islands, says that "this species actually swarms in winter in some of the marshes of Epirus and Albania. The best localities with which I am acquainted for Wild-Duck shooting are, Butrinto, Phanari, the Suro river, in the Gulf of Arta, Sivitazza, and, last, but by no means least, the great marshes between Santa Quaranta and Delvino. A good many Wild Ducks breed in Epirus and Albania. In the Acherusian marsh at Phanari, without exaggeration, they literally darken the air." Lindermayer and other authors on the ornithology of Greece, all record it as common; and Mr. W. H. Hudlestone, who found it breeding there, writes "we found

several of their nests, some with eggs, others hatched off or taken. No Duck in Europe (let the high plateaux of North America be included) has such an extensive breeding-range as the Common Wild Duck." Dresser met with it at different seasons of the year in Southern Germany, Styria, Croatia, the Danubian Provinces, and Turkey, in which latter country Messrs. Elwes and Buckley also record it as everywhere abundant. Professor von Nordmann speaks of it as "common throughout Southern Russia, only during very severe winters migrating for a short time to the south from the northern provinces of the Black Sea; in Southern Russia it is called *Catchka*, the ordinary Russian name being merely *Ootka* (Duck). It occurs on the Caucasus, according to Ménétries commonly at Bakou, especially during the winter season, and is found throughout Asia Minor and Palestine, where Canon Tristram met with it common everywhere. Captain Shelley found it everywhere plentiful and generally distributed throughout Egypt and Nubia; Mr. C. F. Tyrwhitt Drake records it as numerous in Tangiers and Eastern Morocco, Canon Tristram, Mr. Osbert Salvin, and Major Loche as equally common in Algeria, where it is also said to breed. Dr. C. Bolle found it on the Canaries, where it is rare; Berthelot obtained it on the ponds of Maspalomas, on Canaria; and Mr. F. DuCane Godman met with it on the Azores, on the eastern, central, and western groups, and on Madeira; this gentleman writes that "a few Wild Ducks are to be found about all the lakes throughout the islands; however, they are very shy. In Flores I saw several on the mountain-lakes and about the marsh, where they breed. In winter they say that several other kinds of Ducks occur; but I only saw this species, *Anas crecca*, and *Œdemia nigra*."

To the eastward the Mallard is met with in many parts of Asia. Mr. Keith Abbott obtained it in Trebizond, where, he states, it is almost universal; and Messrs. Dickson and Ross record it from Erzeroum, where it is common, and breeds, arriving early in April. Dr. Jerdon writes that it is "not very rare in the north of India, especially in the north-west; but I have never seen it south of the Nerbudda, and have only shot it myself near Mhow, and lately in Kumaon. It has not yet occurred in Bengal. It appears to remain all the year in Cashmere, and to breed in that country, as Theobald found the eggs there in May." We are also informed by Mr. W. E. Brooks that he found it breeding in Cashmere. Mr. Blyth, in his commentary on Dr. Jerdon's work, writes that it is said to occur so near Calcutta as Ranigunge, but he never knew of its being brought to the Calcutta bazar. Captain Beavan met with it commonly about Umballah in the cold weather; but it is said not to occur in Lower Bengal. It is common in South-eastern Siberia, and is found as far north as Kamschatka. Dr. von Middendorff met with it throughout the Stanowoi mountains, even up to the top; they arrived at Amginsk on the 22nd of April. He likewise met with this species in the Sájan mountains and on the south coast of the Sea of Ochotsk, at which latter place it was not rare. Radde met with it during the summer throughout that portion of Eastern Siberia visited by him, both in the open steppes of Mongolia and on the wooded banks of the small streams in the Baikal mountains. On the 18th of August, 1858, he found in the Bureja mountains males in full moult and unable to fly, which, he remarks, is, compared with Germany, very late in the season. The same year they appeared on the 21st of March, and on the 27th they increased largely in numbers. In 1856, large flocks appeared on the Tarei-nor on the 23rd of March, in company with *Anas acuta*, and on the 12th of May the Mallards had paired, whereas the Pintails were still in flocks. In the

eastern Sájan the time of arrival is later, seldom before the 1st of April. On the Central Amoor he saw several flocks as late as the 22nd of September. On the Tarei-Nor both the Mallard and the Pintail were collected in flocks on the 8th of September; on the 12th they began to decrease in numbers; and after the 20th only a few Mallards were to be occasionally met with. Radde never met with the present species in Siberia during the winter. Von Schrenck writes that the Mallard "is found throughout the Amoor country, and in the lower part, near the mouth of the Amoor river, it is the commonest Duck, being there the first to arrive. Mr. Maximowicz observed the first Ducks, probably this species, at the Mariinskischen post on the 3rd (15th) of April, 1855, and in 1856 on the 31st of March (old style). They appeared at the Nikolaieffsk post about the middle of April. I shot the first one on the 23rd and 24th of April (old style), and obtained eggs at Aure, below the Mariinskischen post, on the 22nd of May. . . . . I cannot exactly say when the Mallard leaves the Amoor country, but suppose it to be in October with the other Ducks, as the waters of the Lower Amoor freeze in that month, and early in November this river is from end to end covered with ice. It is, however, well-known that the Mallard winters, in spite of the severe cold, in Siberia, frequenting water which does not freeze, as on the Angara, and some of the rivers of Kamschatka (teste *Pallas*). I do not, however, know of any such localities in the Amoor where the streams remain open; but on Saghalien, the upper portion of the Tymy river does not close, and there I met with the Mallard in the winter at a time when the temperature was several times below the freezing-point of mercury—a clear proof that it is not the severe cold, but the freezing of the rivers and sheets of water, and consequent scarcity of food, that drives this Duck to the south in the winter. However, it is probable that but a small proportion of the numbers of Ducks that in the summer season inhabit this country can find food in the small, generally swift, streams that remain open; and I suppose that the old ones remain, the young migrating southward so soon as the water freezes." Dr. von Schrenck further writes that he found this Duck much more shy and wary during the winter than in the summer season. Dr. Dybowski states that the Mallard is common near Darasun, in Dauria. Captain Blakiston obtained it in Japan; and Mr. Swinhoe records it from Amoy, from between Takoo and Pekin, in North China, and from the Island of Formosa. In America, Dr. Elliot Coues gives its range as "abundant in North America, rarer, or only casual, in New England and further eastward." Dresser never met with it in New Brunswick; but Mr. George A. Boardman records it as rare in that province. Captain Blakiston writes that he has received it from Hudson's Bay, where it is common throughout the interior. Mr. Ross notes it on the Mackenzie, common to the Arctic coast. Captain Blakiston also procured both the bird and eggs at the Forks of the Saskatchewan. We have examined a specimen from the Yukon, now in Dresser's collection. Dr. Coues met with it commonly during the winter on the Potomac and Anacostia rivers; and Dresser saw numbers in Texas, where, during the winter, they frequented the inland streams and ponds, and were met with as far down as the Rio Bravo del Norte.

The Mallard is probably the best-known of our freshwater Ducks, being so common on the larger sheets of fresh water throughout the country; and where not much disturbed, it does not appear to be very shy. Dresser, when in Northern Finland, had ample opportunities of observing their habits. Though the country there is extremely wild, and but little shot over, it appears, contrary to Macgillivray's experience, to feed chiefly, if not entirely, by night. Though often

flushed when passing through the marshy, rush-overgrown lowlands during the day-time, they appeared to be then resting, and not feeding. However, so soon as the early evening began to close in, for in the high north the days begin to shorten quite early in the autumn, the Mallard began to move about; and Dresser has often shot them by laying in wait at some suitable place when scarcely light enough to distinguish them. They generally frequented the small freshwater streams close to the shores of the Gulf of Bothnia, the waters of which latter are nearly fresh, and are frequented by this species almost as much as the inland lakes and ponds. In the spring it is the earliest species to arrive; and their eggs are the first of any of the waterfowl that are found. When travelling northwards in the early spring Dresser often shot them on the small ponds near the road in the wilder parts of the country.

Macgillivray, writing on its habits in Scotland, says that "in winter, it for the most part removes from the higher grounds to the hollows and level tracts, and in frosty weather betakes itself to the shores of estuaries and even of the open sea. In the Cromarty and Beauley Firths great numbers occur along the shores during the winter and spring, and at night especially frequent the muddy parts, where they feed on worms and mollusca. Around Edinburgh are numerous open ditches, and some brooks, to which they resort at night, from October to April, when they may be started in great numbers by a person searching their haunts by moonlight. A friend of mine has often shot them on such occasions; and I have myself seen them thus engaged. It being by touch more than by sight that the Mallard obtains its food, the night appears to be as favourable for this purpose as the day, and is chiefly used in populous districts, while in the wilder parts it feeds at least as much by day. Marshy places, the margins of lakes, pools, and rivers, as well as brooks, rills, and ditches, are its principal places of resort at all seasons. It walks with ease, even runs with considerable speed, swims, and on occasion dives, although not in search of food. Seeds of gramineæ and other plants, fleshy and fibrous roots, worms, mollusca, insects, small reptiles, and fishes are the principal objects of its search. In shallow water it reaches the bottom with its bill, keeping the hind part of the body erect by a continued motion of the feet. On the water it sits rather lightly, with the tail considerably inclined upwards; when searching under the surface it keeps the tail flat on the water; and when puddling at the bottom with its hind part up, it directs the tail backward. The male emits a low and rather soft cry, between a croak and a murmur, and the female a louder and clearer jabber. Both on being alarmed, and especially in flying off, quack; but the quack of the female is much louder. When feeding they are silent; but when satiated they often amuse themselves with various jabberings, swim about, approach each other, move their heads backward and forward, 'duck' in the water, throwing it up over their backs, shoot along its surface, half-flying, half-running, and, in short, are quite playful when in good humour. On being surprised or alarmed, whether on shore or on the water, they spring up at once with a bound, rise obliquely to a considerable height, and fly off with speed, their hard-quilled wings whistling against the air. When in full flight, the velocity is very great, being probably a hundred miles in the hour. Like other Ducks they impel themselves by quickly repeated flaps, without sailings or undulations. In March they pair, and soon after disperse and select a breeding-place. The nest, bulky and rudely constructed of flags, sedges, grasses, and other plants, is placed on the ground in the midst of a marsh, or among reeds or rushes, sometimes in a meadow, or even

among heath, but always near the water. Instances are recorded of its being built in the fork of a tree; and a Duck has been known to occupy the deserted nest of a Crow. The eggs, from five to ten, are pale dull-green or greenish white, two inches and a quarter in length, and an inch and nine twelfths in breadth. When incubation commences, the male takes his leave, though he keeps in the neighbourhood, and, joining others, undergoes his annual moult. The female sits very closely, and rather than leave her charge, will often allow a person to approach quite near. One day while searching in the marsh at the head of Duddingston Loch for some plants, I was suddenly arrested by observing among my feet some living creature of considerable size. Perceiving it to be a Duck, I instantly, perhaps instinctively, pounced upon it. But thinking the eight eggs a sufficient prize, I threw the poor bird into the air, when she flew off in silence. Frequently in leaving the nest she covers it rudely with straw or feathers, probably for the purpose of concealing the eggs. The young are hatched in four weeks, and, being covered with stiffish down, and quite alert, accompany their mother to the water, where they swim and dive as expertly as if they had been born in it. The mother shows the greatest attention to them, protects them from birds, feigns lameness to withdraw intruders from them, and, leading them about from place to place, secures for them a proper supply of food. Sometimes the young birds are destroyed by pike, or fall a prey to rapacious birds. They are extremely active, and elude pursuit by diving and remaining under the water, with nothing but the bill above. I once came upon a whole brood of half-grown ducklings in a ditch, when in a moment they all disappeared under the water; and although I searched everywhere for them, I did not succeed in tracing a single individual. When the young are well grown, and the female replumed, the male commonly joins the flock, and they continue together. Several flocks often unite; but generally these birds are not very gregarious. Being highly and justly esteemed for food, Mallards are shot in great numbers, and are plentiful in our markets. Although they are of a more elegant form, and much more active than the Domestic Ducks, the latter often resemble them so closely in colour as hardly to be distinguishable. Once in the Outer Hebrides, when journeying across a moor, I met with a pair in a small lake overhung by a rock, from which I could easily have shot them, had I not supposed them to be tame Ducks that had strayed to a distance from the huts, some of which were about half a mile distant. The young obtained from eggs hatched by domestic fowls generally make their escape. The Mallard has been known to breed with the Muscovy Duck and several other species."

Dresser found the nests in Finland, usually close to the water or the edge of the marsh, and most often under the shelter of a bush. The eggs are sought after with those of the other waterfowl by old women who make a scanty living by bringing these eggs to the market for sale. Our friend Mr. Benzon describes its breeding-places in Denmark as the "inland lakes, morasses, and other similar places, the nest being placed on an island or at the water's edge, a hole being scratched in the soil, generally under shelter of a bush or some high bunch of herbage, and lined with grass and down;" it sometimes, however, though rarely, breeds in a hollow tree or an old nest of some other species; and he once found it breeding in a deserted Crow's nest high up in a tree at Dyrehaven. It is met with breeding throughout Europe, from the far north down to North Africa, more numerously, however, in Northern and Central than in Southern Europe. The breeding-season is from early in April to late in May; and from seven

to twelve eggs are usually deposited. Dresser obtained the first eggs near Uleåborg in the month of May. Dr. E. Rey informs us that he has known the Mallard to lay as many as fifteen eggs. He further writes that forty-two eggs he has measured average in size 58·3 by 41, the largest measuring 62·5 by 42, and the smallest 50·5 by 39 millimetres respectively. Mr. Benzon gives the size of eggs taken in Denmark as from 52 by 40 to 60 by 44 millimetres. The eggs are dull greenish grey in colour, much resembling those of the common tame Duck.

Besides being shot, many Mallard are annually netted in decoys in the eastern counties of England, though in later years this mode of procuring waterfowl appears to have fallen somewhat into disuse. Large numbers are brought to the London markets from Holland. Lindermayer gives the following notes on the mode practised in Greece of netting the Mallard and other Wild Ducks. "The Kopai lake covers several square miles, and is overgrown with flags and rushes; in this wilderness of rank vegetation there are long passages of open water, these being too deep to allow the water-plants to take root. When the winter approaches these places are fitted with nets made for that purpose; and on the evenings when the snow drives the Ducks down, a couple of boats are manned, and each provided with a lantern and a bell. These boats are rowed from different directions to the place where the nets are; the Ducks do not fly, but swim away from the sound of the bell and the light until they get entangled in the nets. Not only Thebes and Livadia are supplied with abundance of Wild Ducks from there, but several hundred have in one day been sent to Athens." Mr. Robert Gray gives a curious instance of the Mallard being caught with the hand, extracted from some notes by a writer in the 'Field Naturalist' (London, 1833, vol. i. p. 507), who states that a gentleman in Forfarshire, whose property was bounded on one side by the river North Esk, was accustomed to amuse himself by laying down a quantity of grain, and watching the Wild Ducks regaling themselves on it. After continuing the practice for some time, he brought such crowds of Ducks around him that it seemed as if the entire Mallard population of that part of the country were present. With his pockets full of loose grain, this old gentleman went out regularly on his sporting expeditions, and returned with a brace or two of Mallard without ever firing a shot; for, in their eagerness to gobble up the corn, the birds waddled up to his feet, and all he had to do was to stoop down and quietly seize a victim, which was easily transferred to his capacious pockets. The Mallard feeds chiefly on vegetable food. Mr. Collett writes that in September he found the whole crop full of blueberries (*Myrtillus nigra*); and Schübeler shot a female in November whose crop was filled with the seeds of a *Potamogeton* and a lot of small snail-shells not larger than shot. Mr. Benzon states that it is a great epicure, and when the blueberries (*Vaccinium myrtillus*) and the berries of the *Vaccinium vitis-idæa* are ripe one often finds that it has been feeding on these berries, and filling its crop so full that when shot the juice flows out of its mouth.

The Mallard appears to have rather a tendency towards albinism; and we have seen several partial albinoes. Mr. Benzon has in his collection a cream-coloured variety from Zeeland, which is brownish yellow on the fore part of the neck. Another, more grey in colour, was procured from the same locality in 1872.

The birds figured and described are in Dresser's collection; particulars as to locality &c. are given above.

In the preparation of the above article we have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂. Uddevalla, Sweden, March. *b*, ♂, *c*, ♀. Harting, Sussex (*J. E. Harting*). *d*, ♂. Nulato, Lower Yukon, Russian America, May 4th, 1867 (*W. H. Dall*).

E. Mus. Howard Saunders.

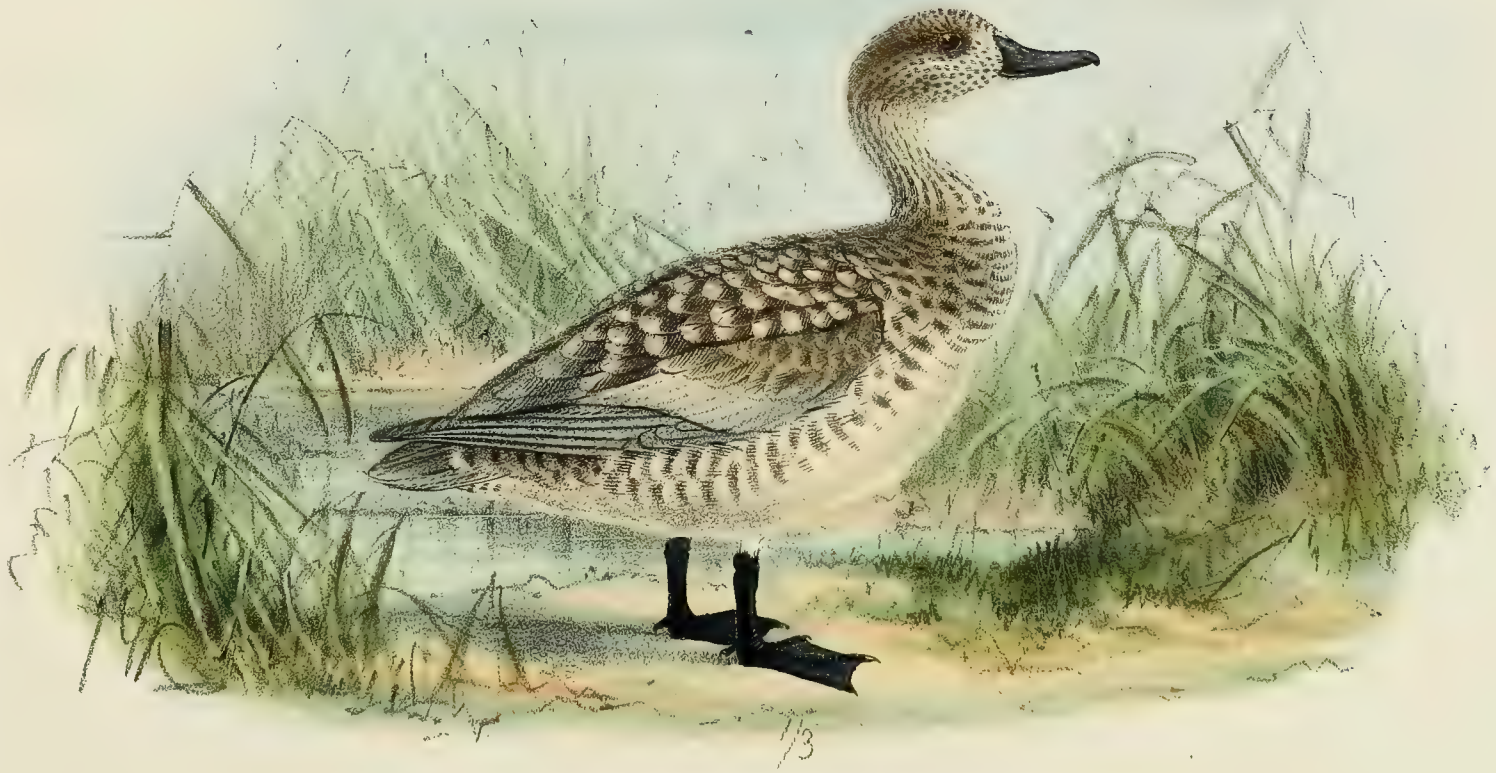
a, ♂ *ad.* Sueca, Valencia, Spain, December 11th (*H. S.*).

E Mus. H. B. Tristram.

a, ♂. Orkney, 1850 (*H. B. T.*). *b*, ♂ *ad.*, *c* ♂ *juv.*, *d*, ♀. Orkney, 1856 (*H. B. T.*). *e*. (No locality) August.

E Mus. J. H. Gurney, jun.

a, ♂. Greatham, Durham, January 2nd. *b*, ♀. Redcar, Yorkshire, December 2nd (*J. H. G.*). *c*, ♀. Partial albino (*J. Glennon*). *d*. Albino, Leadenhall Market, October 25th. *e*, *pullus*. Stromness, Orkney, June (*J. H. Dunn*).



MARBLED DUCK.
ANAS ANGUSTIROSTRIS.
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ANAS ANGUSTIROSTRIS.

(MARBLED DUCK.)

Anas angustirostris, Ménétr. Cat. Rais. p. 58 (1832).
Anas marmorata, Temm. Man. d'Orn. iv. p. 544 (1840).
Fuligula marmorata, Gould, B. of Eur. iv. pl. 373 (1837).
Querquedula angustirostris, Bonap. Comp. List B. Eur. & N. Am. p. 57 (1838).
Dafila marmorata, Eyton, Mongr. Anat. p. 114 (1838).
Marmonetta angustirostris, Reich. Syst. Av.
Marmaronetta angustirostris, Bonap. C. R. xliii. p. 650 (1856).
Chaulelasmus angustirostris, Gray, Hand-l. of B. iii. p. 84 (1871).

Ruhilla (Andalucia), Spanish; *Garganella marmorata*, Italian; *Chihil*, Moorish Arabic.

Figuræ notabiles.

Werner, Atlas, *Palmipèdes*, pl. 493; Bonap. Faun. d'Ital. Ucc. pl. 47; Gould, B. of Eur. v. pl. 373; Bree, B. of Eur. p. 156.

♂ suprà cinerascens, dorsi plumis et scapularibus latè fulvescenti-albo terminatis, his quasi ocellatis: pileo summo cinerascente, plumis brunneo minutè medialiter notatis, regione præ- et postoculari brunneo concolori: facie laterali et collo undique cum gutture toto albicantibus, plumis angustè brunneo marginatis: tectricibus alarum pallidè cinerascentibus: remigibus cinerascenti-brunneis versùs apicem saturatioribus, primariis extùs cano lavatis, secundariis minoribus pallidioribus et versùs apicem lactescentibus, dorsalibus cinerascentibus dorso concoloribus: rectricibus cinerascenti-brunneis, ad apicem latè albicantibus, exterioribus multò pallidioribus: subtùs albicans, pectore superiore magis distinctè, abdomine imo et subcaudalibus obscuriùs brunneo vel cineraceo transnotatis: hypochondriis cinerascentibus conspicuè albo ocellatis: subalaribus albis, exterioribus cinerascentibus, pennis axillaribus purè albis: rostro et pedibus saturatè plumbeis: iride brunneâ.

♀ mari similis.

Adult Male. Upper parts dull brown, with a faint grey tinge, mottled and marbled with light greyish-brown, each feather having a round greyish-brown spot at the tip; the feathers on the upper part of the back grey at the base, then dark brown, and tipped again with buff-grey; head greyish brown, each feather having a dark brown bar; region round the eye dark brown; quills ashy grey on the outer web and brown on the inner web; secondaries pale creamy-brown, the inner ones being much darker; upper wing-coverts grey, with a brownish tinge; upper tail-coverts the same as the back; tail ashy brown, broadly tipped with creamy buff; whole underparts greyish white, the sides of the head, throat, and neck with fine dark stripes, the breast being barred with dark brown; flanks barred and marbled with dark greyish brown; under wing-coverts dirty white; under tail-coverts pale buff, imperceptibly barred with brown; beak and legs blackish lead-colour; iris brown. Total length 14·6 inches, culmen 1·8, wing 7·9, tarsus 1·2.

Female. Similar to the male.

The winter plumuge, judging from the specimens before us, does not differ from the summer dress.

In Europe the Marbled Duck is only found in the extreme south, along the shores of the Mediterranean, throughout Algeria, and ranging as far east as Scinde, where, as below mentioned, it has lately been obtained by Mr. Allan Hume. It has only recently been discovered that it visits Spain regularly during the summer season; but it has now been found breeding there.

To our friend Major Irby, the fortunate discoverer of the eggs of this species in the last-named country, we are greatly indebted for the following excellent notes:—"In Andalucia this species is a summer migrant, arriving from March to May. I have heard of three having been killed late in February; but I myself first noticed it on the 23rd of March. They are tolerably numerous on the marismas and other suitable localities, where they remain to breed, leaving us again in September. I never saw any or heard of their occurrence here except between the dates above given. In 1871 I had two nests, with the eggs, brought to me, the female having been, in both cases, shot off the nest. Both these nests were found in the same small, circular, isolated patch of short spiky rushes, not more than ten feet in diameter, and surrounded by dried mud. I myself went to inspect the place, which is in that part of the marismas near the Coto del Rey, called Las Carnicerias, so termed because in former years the wolves used to kill the sheep there. The nests were formed of small broken bits of dried rushes mixed with a large quantity of down. One nest was taken on the 30th of May, and contained ten fresh eggs, and in the female was another ready for exclusion, which was broken in the fall of the bird. The other nest contained eleven fresh eggs, and was taken on the 7th of June. All these eggs are exactly similar in size and colour. In shape they are inclined to be elliptical, and are in colour yellowish white or buff.

"I have seen small flights of these Ducks or, I would rather call them, Teal, on the sea near Gibraltar, early in May, no doubt passing northward. In the month of April I have observed many hundreds on the lakes of Ras Dowra, in Marocco, between Rabat and Larache, and have also seen them exposed for sale in Tangiers in that month. They move at dusk in small flocks, flying very low, and in their flight they somewhat resemble the female Pintail. I have eaten them, and the flesh of those which I tasted was very good. I give you the notes of the late M. Favier as to their habits in the vicinity of Tangiers, as follows:—'Add to Temminck's notice of this Duck that the feathers on the crown of the male form a sort of short crest capable of erection. In length they measure from 431 to 474 millimetres, and in extent 690 to 734 millimetres. This species occurs in the environs of Tangiers on its double passage, passing over to Europe in March and April, and returning in October to spend the winter in the interior of Africa. Some few remain to breed in this vicinity; and these are the first to leave. They feed on winged insects, chiefly *Myrmelion barbarum*. They place their nests in rushes, and lay in May and June, the full complement of eggs being from four to ten (!). These eggs are more or less elongated, and measure 148 to 159 millimetres in circumference. Incubation lasts from twenty-five to twenty-seven days. After the Common Teal this species is the most plentiful Duck with us. They migrate in large flocks; but their passage in the vicinity of Tangiers appears to be irregular, as

they do not occur every consecutive year. They are, however, less uncertain in their appearance than *Erismatura mersa*.'"

We are glad to be able to add the following notes kindly forwarded to us by Lord Lilford, who may be called the pioneer of Spanish ornithology:—"About this bird I can give you very little information. It is well known to the wild-fowl-shooters of the Guadalquivir; and from them almost all the information I possess is derived. They all seem to agree that this Duck is a vernal migrant to Southern Spain, making its appearance in March, in small flocks, breeding in the country, and disappearing in September. Few are brought into the market at Seville, where the bird is known as '*Ruhilla*,' or '*Ruilla*,' whilst in the Coto de Doña Ana, where I saw a few of this species in May of the present year, it appears to be known exclusively by the name of '*Pardilla*.' In 1869 I offered a high reward for identified eggs of this bird; and in the following year two nests were obtained for me, containing eleven and ten eggs respectively, with the hen bird shot from the nest in each instance. The first of these two nests was obtained during the last days of May, the other in the first week of June, at a spot in or near the Coto del Rey, known as La Carniceria. The Marbled Duck appears to me, from the little I have seen of it, to have very much the same habits as the Common Teal, flying very swiftly, and generally low over the water, uttering a low croaking whistle somewhat like, but not exactly similar to, that of the last-mentioned bird. I have this year received more eggs said to be of this species; but the only proofs of their authenticity, if proofs they can be called, are their close resemblance to the identified eggs of the present species, and the fact that, as far as I know, no other species of *Anas* lays an egg at all like that of the present bird in Andalucia. I observe that Mr. Saunders says (Ibis, 3rd ser. vol. i. p. 396) that 'the Marbled Duck is abundant in the marisma throughout the year, and breeds at Santa Olaya.' Curiously enough it was at the Laguna de Santa Olaya, and there only, that I met with a few of this species in May of the present year. I do not think these birds were then breeding, though no doubt they do breed in that locality, a particularly suitable one for any Duck; but every one whom I questioned on the subject agreed in saying that the Marbled Duck was one of the few species of Anatidæ which they never saw in winter."

Our friend Mr. Howard Saunders, to whom we are indebted for several Spanish-killed specimens of this Duck, records it as not uncommon in the "marisma" in Southern Spain; and the Rev. A. C. Smith states that Professor Barboza du Bocage told him that it is seldom found in Portugal. There is a specimen in the Lisbon Museum. Temminck states that M. Cantraine procured a pair of this species from Sardinia,—another example, also killed in the same country, being the one sent by M. Cara to the Marquis Durazzo, and figured by Prince Ch. Bonaparte in his 'Fauna Italica.' This example is, we believe, in the Museum at Genoa. It has also been known to occur in the Ionian Islands; and Lord Lilford, writing on the birds of these islands, states "I saw a boy at Butrinto with a mutilated specimen of this rare Duck in his hand, which he had just killed on the lake; he said it was alone when he shot it. I once flushed three Ducks at Phanari, which puzzled me very much at the time, but which, I have now little doubt, belonged to this species; and an officer of the garrison at Corfu described to me a small Duck he had killed near Arta, which I think can have been no other but this."

The Russian travellers, so far as we can ascertain, excepting Ménétriés, who records its occurrence in Southern Russia, did not refer to this species; but we have seen specimens said to have come from the Caspian; and Mr. Dode brought eggs of this Duck which he stated he had procured there. Canon Tristram observed it during the summer in Palestine, and writes as follows:—"The most interesting of the Duck tribe was *Anas marmorata*, which we found only in the Huleh, and in great numbers, though very wary, and breeding there in places wholly inaccessible. In June it was the only Duck we could find there, excepting a stray Teal, and now and then a *F. nyroca*, while hundreds of this rare Marbled Duck rose as we approached the openings in the swamps, but always out of shot." Amongst the specimens sent to us for examination is one from Canon Tristram, labelled "Alexandria, Egypt;" but it must be excessively rare in North-eastern Africa, as we can find no other record of its having occurred there, excepting this. According to Loche it is sedentary on the lakes of "Algeria, where it is found in pairs or in small families after the breeding-season. It feeds on crustacea, insects, and worms. It nests on the eyots amongst the herbage and rushes, depositing five or six eggs." Dr. Carl Bolle writes that it is the only Duck which breeds on the Canaries. He observed several pairs in May on the ponds of the charco of Maspalomas, in the dense growth of water-plants, where they had their young with them.

The most eastern country where it has hitherto been observed is Scinde; and we give the following note respecting its occurrence there, kindly communicated to us by Mr. A. O. Hume:—"One of the most interesting of the Indian novelties that my ornithological trip to Sindh during the last cold weather has brought to light is *Anas angustirostris*, the Marbled Duck. Unknown in other parts of India, it swarms in countless multitudes on the 'dauds,' or, as we should call them, 'broads' of Sindh, west of the Indus, and, though less common, is to be met with in the Rodree division also, which is east of the Indus, and occasionally in the Hyderabad collectorate. Like *Aythya nyroca*, its constant associate, it somewhat eschews rivers or open pieces of water, and haunts the rushy lakes, which, when seen at a distance, look like waving hay-fields. When not much shot at, it lies fairly close, and rises out of the low rush as the boats push through it, like Partridges out of a turnip-field; but in most of the gheels or broads that I visited, sportsmen were too frequent visitants, and hundreds of this pretty little Duck rose in ones and twos out of perhaps twenty or thirty acres of rush-concealed water, each bird rising just, and only just, out of ordinary shot, so that with green cartridges one secured a fair bag. This species comes in early in November, and leaves by the end of March; and considering its extreme commonness during the cold season, it is remarkable that no one should ever previously have noticed its occurrence."

In M. Favier's notes on the species, kindly communicated to us by Major Irby, there is a description of the trachea of this Duck, which we translate as follows:—"The trachea of the male is of large diameter towards the centre of the tube, but narrows suddenly towards the inferior and superior larynx, and enlarges again somewhat at the glottis (*glotte*); and the inferior larynx forms a bony protuberance, about the size of a cherry, placed on the left side."

In Dresser's collection are two eggs of this Duck—one obtained by Major Irby in Spain, and

the other obtained from Mr. Dode, who stated that it was procured on the Caspian. Both these eggs closely resemble the eggs of the Common Teal, in size, colour, and form.

The figures on the Plate and the descriptions are taken from specimens in Dresser's collection—the male obtained near Seville, in May, and the female from the same locality obtained in November.

In the preparation of the above article we have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂, *b*, ♀. Seville, 8th of November, 1869 (*H. Saunders*). *c*, ♂. Seville, 30th of May, 1871 (*Ruiz*). *d*. Ras Doura, 21st of April, 1871 (*L. H. Irby*).

E Mus. H. B. Tristram.

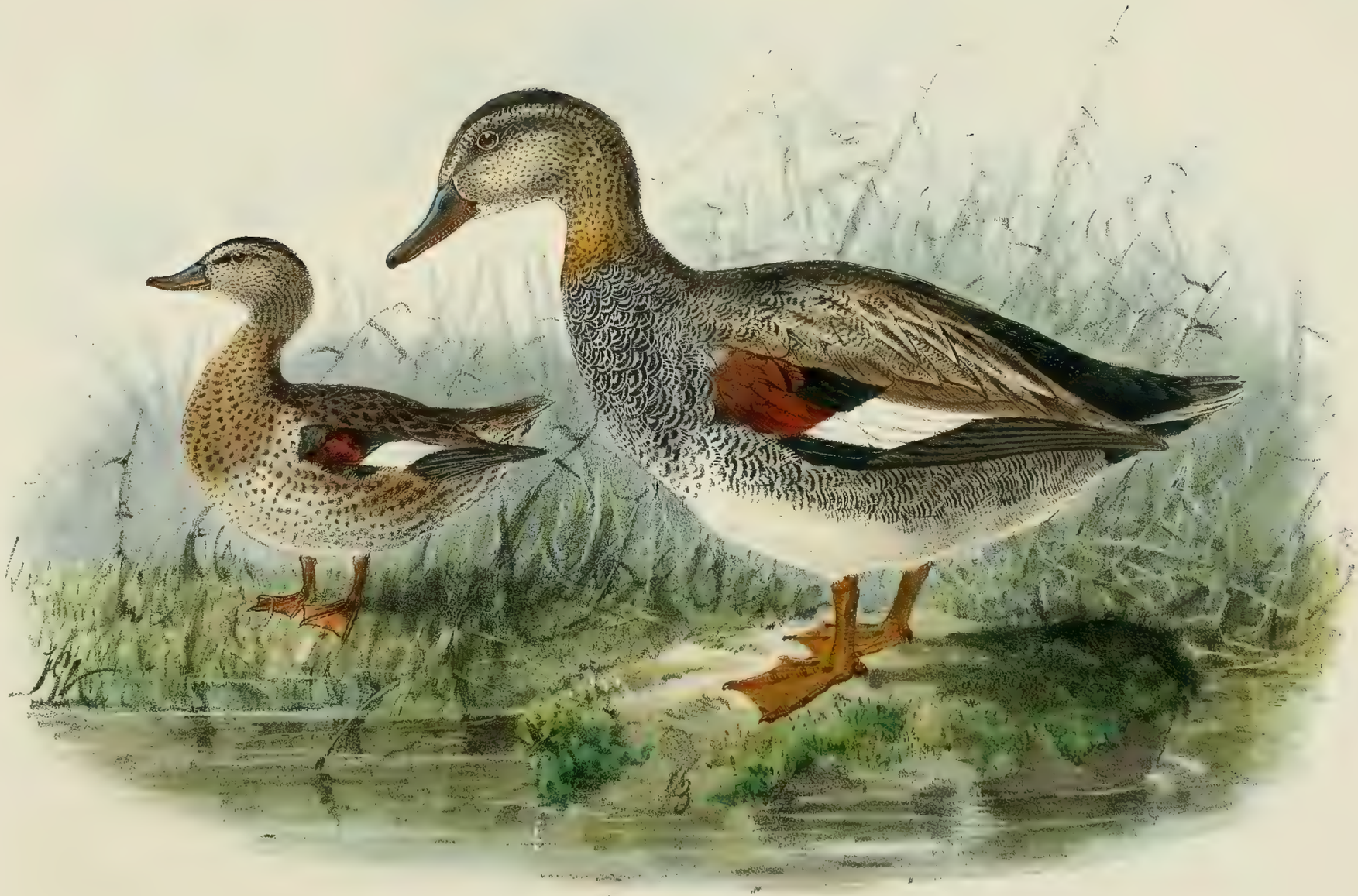
a. Seville, 12th of November, 1869 (*H. Saunders*). *b*. Alexandria, Egypt.

Genus CHAULELASMUS.

Anas apud Linnæus, Syst. Nat. i. p. 200 (1766).
Ktinorhynchus apud Eyton, Monogr. Anat. p. 137 (1838).
Chaulodus apud Swainson, Journ. Roy. Inst. ii. p. 19 (1839).
Chaulelasmus, G. R. Gray, Gen. of B. iii. p. 617 (1845).
Querquedula apud Macgillivray, Man. Brit. B. ii. p. 169 (1840).

Although in many respects the Gadwall, which is the sole representative of this genus, resembles the Mallard, yet the peculiarity in the lamellæ of the bill renders it very distinct from the birds belonging to the genus *Anas*, as well as from other allied genera. As stated in the article on this species, the Gadwall inhabits the Palæarctic, Nearctic, and Ethiopian Regions; and full particulars as to its habits and nidification are there given.

Chaulelasmus streperus, the type of the genus, has the bill rather shorter than the head, about as high as broad at the base, the culmen gradually sloping nearly to the end, the bill slightly broader near the tip than at the base, and rounded at the tip; unguis broadly oval, decurved; gape-line slightly curved, the ends of the lamellæ, which are fine and deep, showing clearly along the edge of the bill; trachea with the tube enlarged near the lower extremity, but contracted above the inferior larynx, which has a medium-sized osseous bulb extending on one side and much anteriorly; wings moderate, pointed, the first two quills longest, inner secondaries and scapulars elongated, pointed; legs and feet as in *Anas*, but rather more slender; plumage close, full, the feathers on the crown and nape rather long and full.



GADWALL.

CHAULELASMUS STREPERUS.

CHAULELASMUS STREPERUS.

(GADWALL.)

Anas strepera, Linn. Syst. Nat. i. p. 200 (1766).
Anas cinerea, S. G. Gmel. Reise, ii. p. 184 (1774).
Anas kekuschka, S. G. Gmel. Reise, iii. p. 249 (1774).
Ktinorhynchus strepera, Eyton, Monogr. Anat. p. 137 (1838).
Chaulodus strepera, Swains. Journ. Royal Inst. ii. p. 19 (1839).
Chaulelasmus strepera, G. R. Gray, Gen. of Birds, iii. p. 617 (1840).
Querquedula strepera, Macgilliv. Man. Brit. B. ii. p. 169 (1840).
Chaulelasmus americanus, Brehm, Naumannia, p. 297 (1855).
Chaulelasmus cinereus, Brehm, ut suprà.
Chaulelasmus streperus, Jerdon, B. of India, ii. p. 802 (1863).

Chipeau bruyant, French; *Anade ridente*, Spanish; *Frisada*, Portuguese; *Trigali*, *Canapiglia*, Italian; *De Kraakeend*, Dutch; *Schnatterente*, *Mittelente*, German; *Culuvert-sekond*, Maltese; *Snatteranden*, Swedish; *Craikovaia-Ootka*, Russian.

Figuræ notabiles.

Buffon, Pl. Enl. pl. 958; Werner's Atlas, *Palmipèdes*, pl. 40; Gould's B. of Eur. pl. 366; Naumann's Vög. Deutschl. pl. 362. figs. 1–3; Gray's Gen. B. ii. pl. 167. fig. 3; Wilson, Am. Orn. iii. pl. 71. fig. 1.

♂ *ad.* vertice et nuchâ rufescenti-fuscis, indistinctè nigro transfasciatis: facie, gulâ et collo rufescenti-albidis, crebrè nigro-fusco fasciatis et punctatis: pectore superiore, dorso et hypochondriis nigro-fuscis, lineis (in illis semicircularibus) albis transfasciatis: dorso postico, uropygio supracaudalibusque velutino-nigris: rectricibus cinereis: remigibus fusco-cinereis, secundariis extimis in pogonio externo velutino-nigris, mediis in pogonio externo albis speculum formantibus, intimis scapularibusque elongatis cinereis vix pallidè marginatis, nonnullis dorso concoloribus: corpore reliquo subtùs albido: subcaudalibus nigris: subalaribus albis: rostro saturatè flavicante, culmine nigricante: iride brunneâ: pedibus pallidè aurantiacis, membranâ natatoriâ nigricante.

♂ *æst.* capite et collo brunnescenti-albidis, fulvo transfasciatis, pileo nigricanti-fulvido vix viridi lavato, lineâ brunneâ per oculum ad nucham ductâ: dorso, uropygio supracaudalibusque saturatè nigricanti-brunneis, plumis omnibus ferrugineo marginatis: alis caudâque ut in ptilosi hiemali: pectore saturatè ferrugineo, plumis singulis maculâ nigrâ notatis: hypochondriis brunneis, saturatè ferrugineo notatis et marginatis: pectore imo abdomineque saturatè albidis, maculis guttiformibus notatis.

♀ *ad.* fœminæ *A. boschadis* simillima, sed paullo pallidior et secundariis albis speculum conspicuum formantibus distinguenda.

Pullus lanugine indutus: capite suprà, collo postico, dorso uropygioque saturatè fulvis, olivaceo lavatis,

uropygio utrinque et dorso postico maculâ dilutè flavâ: subtùs flavescenti-albus: hypochondriis crissoque fuliginoso lavatis.

Adult Male, spring. Crown and nape dark reddish brown, indistinctly barred with blackish brown; head and neck dull brownish white, everywhere narrowly barred with blackish; back blackish, each feather marked with narrow white cross bars, which follow the contour of the feather; lower part of the back, rump, and upper tail-coverts velvety black; tail ashy brown; quills dull ashy brown, much darker on the outer web and tip, outermost secondaries with the outer web velvety black, the inner ones having this portion of the feather white, forming a conspicuous white alar patch; larger wing-coverts velvety black; median coverts rich chestnut-red; lesser coverts dull grey, marbled with sandy brown; scapulars and elongated innermost secondaries dull light brown, some of the former barred like the back; breast blackish, narrowly marked with transverse white lines, flanks similar, but with the lines finer and closer, abdomen white; under tail-coverts jet-black; under wing-coverts white; bill blackish along the ridge of the upper mandible, otherwise dirty yellow; iris dark brown; legs dirty yellow, web blackish. Total length 21 inches, culmen 1·9, wing 10·4, tail 4·0, tarsus 1·55.

Male in summer plumage (Hjelstaviken, Sweden, June 3rd). Crown brownish black, with a greenish tinge; an indistinct streak through the eye dark brown; rest of the head and neck dull brownish white, marked with blackish brown, as in the previously described bird; back, rump, and upper tail-coverts dark blackish brown, each feather margined with rusty red; wings and tail as in the bird above described; breast dull rusty red, each feather with a central black spot; flanks dark brown, broadly margined and marked with dull rufous; the rest of the underparts dull white, each feather having a central blackish brown drop-shaped mark.

Adult Female (Ekolsund, Sweden, July 18th). Crown and nape blackish brown, narrowly striated with pale rufous; back, rump, upper tail-coverts, and scapulars blackish brown, margined and marked with rufous; tail dull white, washed with rufous and marbled with brown; quills dull greyish brown, secondaries darker, the outermost almost blackish grey; three central secondaries having the outer web white, forming a distinct speculum, all the rest being narrowly tipped with white; wing-coverts dark grey, tipped with dirty white, the larger ones marked with rufous; chin and upper part of the throat pure white; neck and breast dark brown, broadly edged with rufous; flanks dark brown, edged and marked with rufous grey, centre of the abdomen dull white; under tail-coverts dull white, spotted with brown.

Young in down. Covered with short soft down; head, nape, back, and rump dark dull brown, on each side of the rump and behind each wing-joint a sulphur-yellow spot, the wing-joints being marked with that colour; forehead, space round the eye, throat, and chest pale sulphur-yellow; abdomen white, shaded with sulphur-yellow, on the lower part sooty grey.

Like the common Wild Duck the Gadwall has a most extensive range, being met with in Europe from Iceland southwards; throughout Asia, except in the far east; in Africa, and throughout a large portion of Northern and Central America. To Great Britain it is only a rare winter visitor, though, according to Mr. A. G. More, the nest has been found in Norfolk, in which county it is said by Professor Newton to breed regularly, though probably the stock was originally the produce of semidomesticated birds. In regard to its having been met with in Scotland, Mr. Robert Gray writes that, "although but a few instances of the occurrence of this species in Scotland have been recorded in the writings of British authors, the Gadwall has been

frequently met with both on the east and the west coasts. It is included in Mr. Don's list of the Birds of Forfarshire, where it had been seen by that accurate observer on the lakes of Rescobie and Balgavies, showing that for nearly half a century it must have been greatly overlooked; and the species was also recorded by the late Mr. Sinclair, of Wick, in his list of Caithness birds, published upwards of thirty years ago. In the west of Scotland the Gadwall is probably not unfrequent, as it is occasionally sent, among other wild fowl, to the poulterers' shops in Glasgow from the west-country shootings. Mr. Elwes has informed me that it is a rare winter visitor to Islay. In the outer islands it has also occurred several times: one, a male, was shot at Barra in the autumn of 1863; and two specimens, male and female, were shot by Dr. Macrury in Benbecula, in March 1864, within fourteen days of each other. Besides these, Dr. Macrury has informed me that he saw a flock of twelve Gadwalls on a loch in the island of Barra in 1868. On the east coast it has been killed on the Tay, and likewise on the Forth, in Aberdeenshire, Forfarshire, Perthshire, and East Lothian. The Earl of Haddington has informed me that in the last-named county he shot a specimen, in immature plumage, at Tyninghame, and that about the same time a pair, male and female, were shot in the river Spey, and taken to Mr. Small, bird-stuffer, Edinburgh, for preservation. In Orkney, according to Messrs. Baikie and Heddle, it has at times been killed in Sanday, but is not a regular visitant." In Ireland it is, according to Thompson, a rare bird; but he gives several instances of its capture in that country.

It has been recorded from Iceland, where it breeds. Mr. Proctor obtained a nest, containing five eggs, near Myvatn; and Professor A. Newton, in a letter to 'The Ibis,' writes:—"In the first place let me mention that Mr. G. G. Fowler informs me that in 1862 he shot a female Gadwall (*Anas strepera*) at Myvatn as she rose from her eggs, two in number; and the day after he killed a fine drake near the same spot. I also learn from Mr. Proctor that he has once or twice received skins of this bird direct from Iceland. As the testimony in each case is indubitable, the species must no longer be subject to suspicion."

In Scandinavia it is a rare bird, according to Mr. Collett not occurring in Norway, though Schrader, doubtless in error, recorded it as breeding in Lapland. "But little was known," writes Mr. C. R. Sundström to me, "of the occurrence of this species in Scandinavia until the last few years. Nilsson writes that it is seldom seen in Southern and Central Sweden, in Skåne, on Gottland, and at Gothenburg, and never in Northern Sweden or Norway; but in a note he mentions that, according to Schrader, it breeds rarely in Lapland. Beyond this nothing was known respecting the range of this species in Sweden. In May 1864, however, a pair were offered for sale in the market at Stockholm, of which the male was stuffed, and is now in the Vetenskaps Akademiens Museum. In 1866, in the month of May, Mr. Meves met with several pairs in the Hjelsta-vik, a bay stretching northwards into Upland from the lake Mälare; and on June 3rd he shot a male, and saw over twenty pairs; so that it is now quite certain that this Duck breeds in Sweden. Since then females, eggs, and young birds have been procured from Hjelsta-vik, where, in 1869, at least from forty to fifty pairs bred. The reason why the Gadwall has so long been unobserved in our country is because the female and young so closely resemble those of the Mallard; but when once the fact that the female has a white speculum, which is visible when the bird is on the wing, became known, and her somewhat higher-pitched call-note, uttered once or twice in succession, distinguished, it was easy to know the female of this Duck from the female

Mallard, with which it has formerly been confused. I may remark that the Gadwall was never observed in flocks at Hjelsta-vik, but two or three pairs together, or more commonly in single pairs. When the male leaves the sitting female, it is always found alone amongst the reeds. The Gadwall is a very shy bird, especially in the spring when living in pairs; and even when followed by her small young ones, though less shy than at other times, the female takes far better care of herself than does the Mallard."

Meves, on his journey to Öland and Skåne, observed several pairs at Hjelsta-vik, on the 20th of May, 1866, but could not procure one. On the 3rd of June he shot a male, and saw from twenty to twenty-five pairs, and after considerable search succeeded in procuring both females and young birds.

I never met with the Gadwall in Finland, though it may occur in the south-eastern part of that country; for Meves saw one on the Ladoga canal on the 9th of June. He likewise informs me that he saw a pair in the Archangel Museum, which were shot near that town. In a letter received from Mr. Leonida Sabanäeff this gentleman informs me that "it is rare in the northern part of Russia, as for instance in the Government of Jaroslaf. According to Severzoff it is met with near St. Petersburg (during migration?). In the Governments of Tamboff and Tula it is rather a common species. In the eastern part of the Government of Perm I met with it up to 57° N. lat. It is most numerous in South-eastern Russia; and, according to Kessler, it seldom remains during the summer in South-western Russia. It inhabits large marshy localities where rushes and reeds are found, and also affects small swampy banks of rivers. In the autumn, during the evening and night, it flies about the fields. It nests in swamps, or along the banks of lakes and rivers; and I have found the nests to contain from eight to twelve eggs. This species is not so frequently met with as *A. boschas*. It is never seen in great flocks during the spring and autumn migrations in South-eastern Russia; but Kessler states it is seen in great numbers in South-western Russia during the spring migration. It seldom dives, flies very fast, making a peculiar noise. They arrive in the district of Ekaterinburg and Moscow at the commencement of April, breed in the latter part of April, and take their departure in the early part of October."

My friend Mr. Taczanowski writes to me that this Duck is not common in Poland, where, however, a few breed in the large marshes. During the autumn migration they are more numerous than at any other season. Borggreve records it as the rarest of the true Ducks occurring in North Germany. In Silesia, according to Gloger, it breeds on the large ponds in considerable numbers. Formerly it bred abundantly, but now only occasionally, on the Conventer Lake, in Mecklenburg. Von Negelein says that it breeds but rarely in Oldenburg; and Baldamus records it as nesting in Anhalt. Boeck procured one on the 26th of May, and Borggreve himself shot a scarcely fledged bird in July, on the Lower Oder; Dr. E. Rey informs me that it occurs near Halle A. S., in the spring and autumn, and that he shot a female on the 11th of July, 1829, at the Salzigen Lake, and found in her an egg ready for exclusion. In Denmark it is said to be not uncommon in the autumn; and Kjærbölling states that it breeds there. It winters in Holland; and Baron de Selys Longchamps writes that it is common in winter on the marshes of Belgium, rarer in Campine, and accidental in the interior. It leaves for the north about the end of April. Godron includes it in his list of the birds of Lorraine as rare, and met with only during migration; and in France it is met with during migration in the northern departments, and throughout

the winter in the south—nowhere, however, common. In Portugal, Professor Barboza du Bocage writes, it cannot be said to be common; but Mr. Howard Saunders records it as "abundant in many parts of Spain during the winter, and up to April, and breeds at Santa Olaya;" however, Major Irby informs me that, according to his experience, it is by means common in Andalucia, and during four winters he himself came across only two shot in flight (one in November, the other in December), and saw two others in the Seville Market in February and March. In a letter just received from Lord Lilford he informs me that he "found this species in May 1872 about the small lakes at Santa Olaya, in the Coto de Doñana, where no doubt it breeds, though we did not meet with the nest. I obtained specimens in Seville in February and March of the same year; but it does not appear to be common in that neighbourhood, as Manuel Llano, the principal duck-shooter, had no name for it. In the Coto de Doñana it is known as 'Frisa.'" Passing eastward, again, I find it recorded as occurring during migration and in the winter season in Savoy and Sardinia, in which latter country, Lord Lilford tells me, he has himself shot it; and Mr. Howard Saunders informs me that it is met with in Sicily during the winter, being especially numerous in the marshes of Catania and Lentini. Mr. C. A. Wright states that it occurs in Malta occasionally during the winter season. Lord Lilford met with it in the Ionian Islands commonly during the winter; and in Greece, according to Lindermayer, it winters, but leaves before the equinoctial gales. Messrs. Elwes and Buckley, who likewise found it common in Macedonia, believe that some remain there to breed; and this is not improbable, as I have obtained the eggs from the Danube, where I met with it in the early spring, but where it does not appear to be common; and as regards its occurrence in Styria, the late Mr. Seidensacher informed me that he only once met with it. Professor von Nordmann writes that it is very common in Southern Russia; and Mr. Goebel records it as breeding commonly on the large ponds at Uman, where he found one nest on the 28th of May containing six, and another on the 20th of May with four fresh eggs. Ménétries does not include it in his list of the birds found in the Caucasus; but it is found in Asia Minor, and Canon Tristram met with it in Palestine during the winter season. According to Captain Shelley it "ranges throughout Egypt and Nubia, and is moderately abundant, frequenting the large sheets of water in preference to the small pools and canals. I have shot it in Lower Egypt, the Fayoom, and up the Nile to El Kab." Mr. Osbert Salvin and Major Loche, as well as Canon Tristram, all record it as found in Algeria, where it occurs during the winter, and is tolerably common on Lake Fezzara and near Constantine; but Loche states that it only occurs periodically. Major Irby informs me that it is by no means common in Morocco, where Favier states it to be "irregular and uncertain in appearance between March and November." Lord Lilford shot it in Tunis. It does not appear to occur on the islands.

To the eastward it is met with in Siberia, except, according to Pallas, in the far east. Radde found it only in the Transbaikal and the eastern Sajan Mountains; and Middendorff procured it in the Stanowoi and on the south coast of the Sea of Ochotsk. Mr. Swinhoe obtained it in China, at Shanghae, where, however, it is rare; and Professor Schlegel possesses a specimen in full plumage obtained in Japan by Mr. Bürger. "Throughout India," Mr. A. O. Hume writes, "the Gadwall is perhaps the most plentiful species of Duck during the whole of the cold season. I have it from Debrogurh on the east, and Attock and Kurrachee on the west. I hardly ever

remember to have come across any piece of water in India during the cold season in which there were any Ducks without seeing the Gadwall. Ponds, lakes, rivers are all alike to them, at any rate, during the day-time; and, as a rule, I think that with us they are, until fired at once or twice, far from wary. They come during October; and some of them remain, especially towards the north-west, as late as quite the end of April, though lower down the country it is rare to meet with them after the first of that month."

How far to the southward this Duck is met with in Africa I cannot say. Professor Schlegel (Mus. P.-B. *Anseres*, p. 48) writes that it has been obtained by M. Verreaux at the Cape of Good Hope; but Mr. E. L. Layard (Ibis, 1869, p. 76) points out that this must surely be a mistake, and further states that he does not think that the Gadwall is found in South Africa.

To the westward it has been recorded from Cuba, Bermuda (*E. von Martens*), and Jamaica (*R. Albrecht*). Professor Baird gives its range in the United States as "North America generally." Captain Blakiston writes that "the Gadwall was seen and examined on the Saskatchewan by myself; and a specimen is recorded thence in the 'Fauna Boreali-Americana.' I have, moreover, seen a specimen from Hudson's Bay."

I did not meet with it in New Brunswick; but my friend Mr. Boardman informs me that it does occur there, though rare. Dr. Elliott Coues records it from South Carolina as common; and it occurs down into Texas and Mexico. I found it not uncommon near Eagle Pass during the winter, and on the ponds and streams between that place and San Antonio. On the 2nd of June I shot one on Galveston Island. It is met with equally numerous in Western America. Mr. R. Brown found it on Vancouver's Island; and Mr. J. A. Allen records it from the Great Salt Lake. I may further add the following notes given by Audubon:—"I have met with this species along the whole of our Atlantic coast, from Eastport, in Maine, to Texas. It is, however, more abundant in the interior than in most of our maritime districts, and is particularly so on the tributaries of the Ohio, Missouri, and Mississippi. In the early part of autumn and late in spring many are found on the margins of our great lakes. Yet the Gadwall has been represented as not plentiful in the United States, probably on account of its being generally dispersed, and not congregated in particular districts.

"The creoles of Louisiana name it 'Violon,' on account of the whistling sound of its wings. It arrives in the neighbourhood of New Orleans and the mouths of the Mississippi along with the Widgeon, and is fond of the company of the Red-head, to which it is about equal as an article of food. The Gadwalls are usually seen in small flocks, and during winter resort to the larger lakes and pools in the interior of the great marshes, adjoining the waters of the Gulf. In that part of the country they feed on small fish, insects, and aquatic grasses. Fewer of them are found in Massachusetts and the State of New York than elsewhere; and this is probably on account of these districts being more elevated and less marshy than those further south. My friend Dr. Bachman informs me that they are rather plentiful in South Carolina, where they are considered good eating, and where they arrive in the beginning of October, but are more frequently met with at that season and in early spring than during winter, when a single individual may sometimes be seen in a flock of other Ducks. While we were in Texas, in the latter part of April and the beginning of May, we found the Gadwall quite abundant on all the island ponds and streams, as well as on the brackish pools and inlets of the islands and shores of

Galveston Bay. Many of them had paired and separated from the other ducks; and I was assured that this species breeds there, as does the Dusky Duck, the Mallard, the Blue-winged Teal, the Widgeon, and the Shoveller, the young of all these species being plentiful in the end of June and beginning of July. I was satisfied as to the truth of the repeated assurances I had received on this subject, by observing the manners of individuals of all these species before my departure from that country. After a continuance of rainy weather, Gadwalls are found in great numbers on the vast prairies of Oppelousas and Attacapas, where I have been told they continue until very late in spring, and some remain to breed."

In its habits the Gadwall bears considerable affinity to the Mallard; and the female resembles the female of that species very closely, but may always be readily distinguished by the white on the wing. It is shy, though scarcely so much so as the Mallard. It is essentially a freshwater duck, and frequents the streams, lakes, and inland ponds wherever suitable food is to be found and it is not exposed to persecution. It feeds chiefly on vegetable matter, leaves, buds, and roots of several water-plants, the latter of which it procures, not by diving, but by reaching down in the water, the tail being straight up in the air and the head held down perpendicularly. When in this position they are most easily shot; and when hidden at the edge of a piece of water I have often waited until the ducks commenced feeding and turned end upwards, when I have made a most effectual pot shot amongst them. When undisturbed and feeding they are noisy and keep up a low quacking, which almost sounds like a note of satisfaction. Not only, however, does it feed on vegetable matter, but also on all sorts of water-insects, small shell-fish, frogs, and frog-spawn, and even on very small fish. In the late summer and autumn, when the seeds of the various water-plants are ripe, it visits places where these seeds are plentiful, and feeds on them. Naumann writes that it " feeds on seeds of several sorts of *Pomatogeton*, as for instance *P. pectinatus* and *P. marinus*, the seeds of which it procures by fetching up the sprays of the plant to the surface and picking them off. It is especially fond of the seeds of the manna-grass (*Festuca fluitans*), and is likewise partial to oats and, in the southern countries, rice. When in confinement it eats oats, bread, pieces of cabbage, turnips, and potatoes."

Its flight resembles that of the Mallard, but is, if any thing, swifter; and it rises and drops from or on the water or land with great ease and celerity.

In Germany, Naumann states, the Gadwall commences to leave about the end of September, the major portion, however, not migrating before October; and should the season be mild, a few remain until late in November. In March and April they reappear, often arriving in large flocks, though not in such numbers as the Widgeon, which arrives about the same time. Small flocks of eight or ten individuals are more often seen than single pairs; but, on the other hand, as large flocks as from thirty to fifty individuals are more seldom observed. When on migration they usually fly by night at a considerable altitude, and their call-note is often uttered.

The Gadwall breeds throughout Central and Southern Europe, making a nest much like that of the Mallard, close to the water's edge, near freshwater lakes or streams, and depositing in it from nine to thirteen eggs. Mr. Meves describes a nest, found in Upland by Mr. Engelhart, as being placed under a bush about a dozen yards from the shore of the lake, and consisting of a depression in the soil lined with a few dry leaves and some down; another was in a meadow about fifty yards from the water, and was made of dry grass and lined with down. Dr. E.

Rey informs me that it breeds in Mecklenburg, Oldenburg, Brunswick (fide *Blasius*), Anhalt (*Baldamus*), Silesia (*Gloger*), and also in Denmark. In Southern Russia it breeds at Kieff and Sarepta.

Eggs in Dr. Rey's collection measure 55 by 40 millimetres. I have in my collection several eggs of the Gadwall collected at Czóngrad, in Hungary, and given to me by Mr. Johann von Frivaldsky, of the Pesth Museum. In colour and texture these eggs resemble those of the Widgeon, being pale creamy yellow; and in size they average $2\frac{4}{40}$ by $1\frac{1}{2}$ inch.

On the Plate I have represented in the foreground the male in full spring plumage, and in the background the male in the plumage it assumes for a short time during the summer season, both specimens being in my own collection. The female, being so similar to the female Mallard, but being easily distinguishable by its white speculum, I have not figured.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *æst.* Hjelstavik, Sweden, June 3rd, 1866; *b*, ♀ *ad.* Ekolsund, Upland, Sweden, July 18th, 1870; *c*, *d*, ♂. Leadenhall Market, March; *e*. San Antonio, Texas, winter of 1864–65 (*H. E. D.*). *f*, ♂. Janos, Mexico, April 1855 (*Dr. C. B. Kennerly*).

E Mus. H. B. Tristram.

a, ♂. Leadenhall Market, March 14, 1867 (*Gatcombe*). *b*, ♀. Brussels, October 20th, 1869. *c*, ♂. Algiers, February 15th, 1856 (*H. B. T.*).

E Mus. Baron A. von Hügel.

a, *pullus*. Sarepta, Volga, June 1871 (*Möschler*).

E Mus. J. H. Gurney, jun.

a, ♂, *b*, ♀. Leadenhall Market, March; *c*, ♂. Moscow, September 21st, 1869 (*J. H. G., jun.*).

E Mus. Howard Saunders.

a, *b*, ♀. Valencia, Spain, December 21st, 1871.

Genus SPATULA.

Anas apud Linnæus, Syst. Nat. i. p. 200 (1766).
Spatula, Boie, Isis, 1822, p. 564.
Rhynchaspis apud Stephens in Shaw's Gen. Zool. xii. p. 114 (1824).
Spathulea apud Fleming, Brit. An. i. p. 123 (1828).
Clypeata apud Lesson, Man. d'Orn. ii. p. 416 (1828).

The Shovellers, which are easily recognizable by their peculiar bills, inhabit the Palæarctic, Ethiopian, Oriental, Australian, Nearctic, and Neotropical Regions, only one species being found within the limits of the Western Palæarctic Region.

These birds are more particularly freshwater Ducks, though they are sometimes found frequenting the sea-coast. They are gregarious, though as a rule they are not found in such large flocks as many of the other species of Ducks. They feed on seeds, grain, and various other vegetable substances, as well as small water-insects, snails, worms, and small fish. They swim, like their allies, with ease, but seldom dive unless closely pursued. They fly swiftly, their flight being not unlike that of the Mallard. They place their nest on the ground near fresh water, concealing it carefully in the high grass, or under a bush, constructing it of grass-straws lined with down, and deposit numerous pale greenish-grey eggs.

Spatula clypeata, the type of the genus, has the bill much longer than the head, higher than broad at the base, depressed, and broadening towards the end, where it is nearly twice as broad as at the base; unguis small, oblong-ovate, decurved, the edge of the bill sinuate, the numerous elongated slender lamellæ projecting and forming a fringe from the base to the broadest part; nostrils small, oval; trachea enlarging gradually from the top, the inferior larynx with a small bulb extending on one side and behind; bronchi large; wings moderate, pointed, the first quill longest; inner secondaries and scapulars elongated, acuminate; legs short, the tibia with a very small space bare, tarsus short, compressed, anteriorly scutellate; hind toe small, with a very narrow membrane; anterior toes moderate; interdigital membranes emarginate; claws rather long, slender, compressed, arched, rather pointed.



SHOVELLER.
SPATULA CLYPEATA

SPATULA CLYPEATA.

(SHOVELLER.)

Anas clypeata, Linn. Syst. Nat. i. p. 200 (1766).
Le Souchet, Buff. Hist. Nat. Ois. x. p. 56 (1786).
Anas mexicana, Gmel. Syst. Nat. i. p. 519 (1788).
Anas rubens, Gmel. ut suprà (1788).
Anas jamaicensis, Gmel. ut suprà (1788).
Spatula clypeata, Boie, Isis, p. 564 (1822).
Rhynchaspis clypeata, Steph. Shaw, Gen. Zool. xii. p. 115 (1824).
Spathulea clypeata, Flem. Brit. An. p. 123 (1828).
Clypeata macrorhynchus, Brehm, Vög. Deutschl. p. 876 (1831).
Clypeata platyrhynchus, id. tom. cit. p. 877 (1831).
Clypeata pomarina, id. tom. cit. p. 878 (1831).
Clypeata brachyrhynchus, id. tom. cit. p. 879 (1831).

Souchet, French; *Löffelente*, German; *Pato trombeteiro*, Portuguese; *Pato cuchareta*, Spanish; *Palettuna*, Maltese; *Mestolone*, *Cucchiarone*, Italian; *Koulalia*, Greek; *De Slobeend*, Dutch; *Skéand*, *Skjöldnöb*, Danish; *Skedand*, Swedish; *Skovland*, Norwegian; *Ootka soksoon*, Russian (*Kessler*).

Figuræ notabiles.

D'Aubenton, Pl. Enl. pl. 971 (♂), 972 (♀); Stephens, tom. cit. pl. 48; Werner, Atlas, *Palmipèdes*; Wilson, Am. Orn. pl. 67; Audubon, B. of Am. pl. 394; Gould, B. of Eur. pl. 360: Naumann, Vög. Deutschl. pl. 306. figs. 1–3; Gray, Gen. of B. ii. pl. 167. fig. 9; Fritsch, Vög. Eur. taf. li. figs. 4–6; Sundevall, Svensk. Fogl. taf. lviii. fig. 6.

♂ *ad.* capite et collo superiore nigris viridi et purpurascente nitentibus: dorso nigricanti-fusco, plumis omnibus albido marginatis: uropygio et supracaudalibus nigricantibus, vix fulvescente marginatis: remigibus saturatè fulvis, scapis albis, secundariis externis in pogonio externo splendidè viridibus speculum formantibus, secundariis intimis valdè elongatis, brunneis, viridi limbatis, ad apicem medialiter albis, duobus intimis in pogonio externo versùs apicem cæruleis: scapularibus albis, nonnullis ochrascente limbatis et brunneo fasciatis: tectricibus alarum majoribus nigricanti-brunneis, albo terminatis, medianis et minoribus cæruleis: rectricibus externis albidis medialiter vix fulvo notatis, centralibus griescenti-brunneis albido apicatis: collo imo et pectore superiore albis, pectore imo et corpore subtùs rufescentibus: subcaudalibus saturatè isabellinis brunneo marmoratis et vix viridi nitentibus: rostro nigro: iride flavicante: pedibus aurantiacis.

♀ *ad.* mari dissimilis: capite et collo saturatè ochraceis, brunneo striatis: dorso saturatè fusco, plumis omnibus rufescente ochraceo marginatis: uropygio et supracaudalibus fuscis vix albido notatis, his rufescente limbatis: remigibus saturatè fuscis, versùs apicem et in pogonio externo nigricante limbatis, secundariis albido marginatis et vix viridi limbatis: tectricibus alarum majoribus albido apicatis,

minimis vix saturatè cæruleo lavatis: subtùs saturatè ochracea, pectore et hypochondriis brunneo guttatis: subcaudalibus saturatè brunneo notatis: rostro viridi-brunneo, ad basin et in mandibulâ aurantiaco: iride brunneâ: pedibus saturatè aurantiacis.

Adult Male in winter (Leadenhall Market, December). Head and upper portion of the neck black, glossed with bottle-green and purple; centre of the neck behind and back blackish brown, edged with dull white; rump and upper tail-coverts blackish, here and there imperceptibly edged with dull fulvous; smaller scapulars on each side of the back white, one or two washed with sandy yellow and barred with dark brown; quills dark brown, with white shafts; outer secondaries with the outer web bright metallic green, forming a large speculum; inner secondaries much elongated, the outer ones having a white central stripe at the tip and being slightly glossed with green, the innermost two having the terminal half of the outer web bright blue, and the inner web white in the centre, otherwise greenish brown; larger wing-coverts blackish brown, tipped with white, median and lesser coverts brown at the base, but otherwise rich sky-blue, this latter colour alone being visible; outer tail-feathers dull white, with narrow dark centres; central tail-feathers brownish grey, edged with dull white; lower part of the neck and upper part of the breast white; lower part of the breast and underparts generally rich rufous, this colour being brightest on the flanks, which are dark fox-red, a patch on each side of the base of the tail pure white; under tail-coverts dull creamy yellow, marbled with dark brown, some being glossed with bright metallic green; under wing-coverts white, marked with dull brown; bill black; eye bright yellow; legs and feet very bright orange. Total length 20·5 inches, culmen 2·9, wing 9·0, tail 3·1, tarsus 1·3.

Adult Female (Leadenhall Market, December). Head and neck dull yellowish clay-brown, the feathers having dark centres, giving a striated appearance; back dark brown, each feather broadly margined with clay-brown or dull ochre; rump dark brown, some of the feathers with a subterminal white margin; upper tail-coverts reddish clay, marked with dark brown; quills dull brown, darker on the outer web and towards the tip; secondaries margined with dull white, and faintly washed with greenish; lesser wing-coverts slightly washed with dull light blue; larger coverts tipped with white; chin dull yellowish clay, unspotted; underparts generally dull clay-colour, on the breast and flanks and here and there on the abdomen marked with large dark brown drops; under tail-coverts marked with dark brown; beak olive-brown, base of the maxilla and the entire mandible orange; eye hazel-brown; legs and feet dull orange.

Adult Male in autumn. Resembles the female, but is darker in colour, and may be easily distinguished by the bright green speculum and blue on the wings, which it never casts; the beak is also generally somewhat larger in the male than in the female; and the former has the iris yellow, whereas in the female it is hazel-brown.

Young in down. Upper parts dull olive, underparts dark dull sulphur-yellow, on the sides of the head washed with rusty yellow; centre of crown, nape, and neck dark olive-brown; from the base of the bill, through the eye to the nape, a dark brown line, and a dark spot on the auriculars; on each side of the back behind the wing two irregular yellow spots, and a similar spot on each side of the rump.

The young of this species resemble those of the Garganey, but may at once be recognized and distinguished from those of any other duck by their broad bills.

The range of the Shoveller, like that of many of the Natatores, is very extensive, as it is found throughout Europe down into Africa, Asia—even, according to Mr. Gould, extending to Australia—

and in America, from Alaska down to Costa Rica. In Great Britain it is tolerably common during the winter season; and a few breed with us. Mr. More states that "Mr. Thompson mentions a nest found in Dorset. Yarrell tells us that the Shoveller formerly bred in the Romney Marsh. It still breeds occasionally in Norfolk; and Mr. F. Bond has found the nest in Staffordshire. Canon Tristram states that it breeds occasionally in Durham; and Mr. Hancock marks it as breeding regularly in Northumberland." Mr. Stevenson informs me that "it visits Norfolk in winter in small numbers, even in the sharpest weather (a fact I have only noticed of late years); and it still nests with us in some few localities on our 'Broads' and 'Meres,' but is scarce in summer as compared with the Garganey Teal." Mr. Cordeaux records it as "by no means rare in the Humber district, as may be inferred from the fact that between the years 1833–34 to 1867–68, thirty-five years, 285 were taken on the small decoy of Ashby-on-the-Trent, North Lincolnshire. The largest number captured in any one year was in the winter of 1860–61, namely 34. These, however, represent only a portion of the Shovellers visiting the Ashby pond during that period, as many of the flocks would leave again without entering the nets. In the winter of 1868–69 a flock of sixteen, principally males, frequented the decoy waters for some days, and none of them were captured.

"Mr. Boulton has had several specimens shot on the river Hull, and says that it has occasionally been known to breed amongst the sedgy and more retired portion of that river, and would do so more frequently but for the too numerous gunners which frequent the towing-path. The Ducks, I am told by those who have had opportunities of watching them, have a curious habit of swimming round and round each other in circles, with the head and neck depressed to the surface of the water; this they will do for hours together." Speaking of its range in Scotland, Mr. Robert Gray states that it "has frequently occurred in the west of Scotland; one, a fine male, which I had an opportunity of examining, was shot in a small stream near Girvan, in May 1860; another, also a male, was shot in Possil Marsh, near Glasgow, on 24th May, 1869; a third, the male bird of a pair, was killed on the Gryfe, near Inchinnan, Renfrewshire, in the first week of June, 1870. The Shoveller has likewise been met with several times on Loch Lomond, chiefly in severe winters; and a pair, male and female, were shot on the Cree, in Wigtownshire, in the spring of 1865. Several were killed on the Nith, in Dumfriesshire, in 1850, 1851, and were preserved by Mr. Hastings, bird-stuffer, Dumfries.

"Some of my Hebridean correspondents have, at various times, sent me word of ducks with broad bills; but I have never obtained a specimen from the outer islands, nor have I been able to get the species sufficiently authenticated there. Mr. Elwes informs me that it is a rare winter visitor in Islay.

"Having seen numbers of Shovellers shot on the Ribble, in Lancashire, early in May, and traced the migratory flight of the species northwards to the Solway Firth, thence in an easterly direction through the counties of Berwick, East Lothian, Fife, Forfar, and Kincardine, to Aberdeen, I conclude that the breeding-haunts of the species must lie somewhere to the north-east of the British Islands, and that in migrating northwards along the west coast of England, the flocks are tempted to diverge from their course by the trending of the Solway. A few of the Shovellers which cross the firth probably remain to breed; indeed in one instance Sir George Leith shot a female and found the nest in Dumbartonshire; and it is not unlikely that the pair

seen at Inchinnan in June were breeding when the male was shot. A few straggling pairs may also remain in the eastern counties. Sir William Jardine mentions, in his 'History of British Birds,' that he saw a nest and eggs, with the female bird, that had been brought from Gullane Links, in East Lothian.

"Regarding the occurrence of the bird itself on the east coast, the Earl of Haddington informs me that he shot a beautiful male at Tyninghame, in February 1861; and Dr. J. A. Smith, of Edinburgh, has sent me word of a pair, male and female, which he examined, having been shot at Kincardine, on the Forth, on the 1st April, 1859. In December of the same year, a young male was obtained near Aberdour, in Fifeshire. Mr. Harvie Brown has also informed me that Mr. Samuel Singer, of Kincardine, has on two occasions shot the Shoveller on the Firth of Forth. The species is included in Don's 'Fauna of Forfarshire,' a county in which it is still found. The last specimen that came under my observation was shot in 1867, in the loch of Forfar, by one of the Earl of Strathmore's keepers. In Aberdeenshire it has several times been procured, as I am informed by Mr. Angus, who has given the following account illustrating how much may be done sometimes by earnest perseverance in tracing species correctly:—'In the spring of 1856, Mr. Davidson, gamekeeper, Seaton House, shot an adult female Shoveller at the dam near the toll-bar at the bridge of Don. It is now in Mr. Mitchell's museum. I shot an adult male at the same place on 21st April, 1866. The tinting of the plumage was almost perfect; the stomach contained seeds, insects, and a large quantity of gravel. On 4th of May of the following year I learned that two "Wigeons with braid nebs" had been shot at the dam; but on calling at the house of the person who killed the birds, I was told they had been cooked and eaten. I fortunately found, however, the heads, which had been thrown out, and recognized them as female Shovellers. On the 6th, I visited the dam by 4 A.M., and had the good luck to find three Shovellers, two males and a female, busy diving and feeding. By crawling behind the embankment on the south side of the water, I got quite close to them, and waited to get the birds in a line; but they were either too far apart, or not on the surface at the same time. I killed one of the males with my first barrel, and wounded the female with my second; but she managed to escape seawards. The other male rose within ten yards; his flight was much slower than that of the Mallard, and he did not rise to the same height. Though killed fourteen days later than the specimen shot in 1866, the male I secured on this occasion was not so far advanced in its breeding-plumage. Its stomach contained sand, mud, and fresh mollusks. On the morning of the 23rd I again visited the dam in company with my friend, Mr. Proctor, who fired two unsuccessful shots at the other male, which I was informed had regularly frequented the place, arriving at night; but after this he did not return. Mr. John Wilson, Methlic, who is an enthusiastic ornithologist, and who possesses a very select and neatly mounted collection of our local birds, informs me that he once observed this species on the lake at Haddo House; and I may add that an Aberdeenshire male Shoveller, formerly in the collection of the Rev. Mr. Leslie, of Coul, is now in the University here.'

"Messrs. Baikie and Heddle mention that a Shoveller was killed in Orkney by Mr. Strang in 1833; but there appears to be no other trace of its appearance there, or in any of the Shetland Islands." In Ireland, Thompson writes, "it is a regular winter visitant to some parts of the island." I do not find it recorded from Greenland; but "Mr. Baring-Gould believes that

he saw it on Eyjarfjörðr," though he did not procure the specimen. In Norway, Mr. R. Collett writes, it "occurs now and then on the southern coasts, and breeds in several places along the S.W. coast." He records specimens as having been obtained at Mandal in 1830, Grimstäd, and Stavanger. He states that Mr. Clauson obtained five young birds and the two parents near Christiansand in the autumn of 1868, and it must thus have bred there. It has been obtained as high up as Sondmor, 62° N. lat. It is a rare Duck in Sweden; and its distribution in that country is irregular. Mr. Meves writes that he "found it on Gottland and Öland, where it was tolerably numerous during the breeding-season; and last year nests were found near Norrköping. I do not know for certain of any localities in Northern Sweden where it breeds; but several old birds were shot during the spring migration at Norrtelje." I never saw it in Finland; but in a letter from Professor Malmgren he informs me that this Duck breeds at Uleåborg (65° N. lat.), where he himself has seen the young, but it is uncertain if it occurs there every year. In general it is rare in Finland, where it ranges usually up to 60° N. lat.

Mr. Meves informs me that he met with it "not uncommonly on the Ladoga and Onega Lakes, at the mouth of the Dvina; and in August not a few used to be sent to the Archangel market. Near Perm I met with a female convoying her newly hatched young (eight in number) on a meadow, who, after trying desperately to save her young, became so shy that she would not allow me to approach within gunshot range. I observed no Shovellers in the Ural, where, however, according to Sabanäeff, it is not rare." Mr. Taczanowski informs me that "this Duck is not rare in Poland during migration; but it breeds in small numbers, and only in the eastern parts of the country." In Northern Germany it is by no means uncommon; and Borggreve states that it "breeds commonly in Mittel-Oderbruch, but never on the neighbouring ponds in the flat country; on the coast of North Germany it is commonly met with during the winter." Dr. E. Rey found it breeding on a pond close to the Salzigen Lake (Wanzleben), and took the eggs on the 18th of May, and again on the 2nd of June. In Denmark it is not uncommon; and I am indebted to Mr. Benzon for a series of eggs and several young birds in down obtained in Jutland. This gentleman informs me that "it breeds here and there on the peninsula, as well as the islands, and both on the coast and also on inland sheets of water, and especially affects the small islands on the fiords. I have on several occasions found the nest on a small island in the Söborg Mosé, close to Copenhagen, and on one occasion found one nest with eleven, and another with twelve eggs, close to each other." In Holland and Belgium it is a migrant, but breeds in the former country.

Degland and Gerbe state that it is common and resident throughout the winter in the south of France, but is merely a passing visitor in the north. Its flesh is highly esteemed, especially by the lower clasess, who call it *rouget de rivière* (literally "river-mullet"). It winters in Provence, leaving about the end of February. It occurs in Portugal, being included in Professor Barboza du Bocage's list; and as regards its occurrence in Spain, Mr. Howard Saunders records it as "not uncommon in the 'marisma,' where it probably breeds."

Passing eastward again we find it, according to Savi, migrating through Tuscany in April, and again in November. Bailly says the same as regards Savoy. Mr. C. A. Wright records it as "one of the commonest of the Maltese Ducks, passing from November till the beginning of spring." Lord Lilford met with it commonly during the winter in the Ionian Islands; and the

authors on Greek ornithology speak of it as one of the commonest species found there in the winter. The same is said by Messrs. Elwes and Buckley as regards its occurrence in Turkey; but they add that it probably breeds there. My friend the Ritter von Tschusi Schmidhofen writes that "it is not rare and breeds in Bohemia. In the Tyrol it arrives in October and November, and frequents the lakes during the winter, migrating northward again in February. In Southern Styria it is rare, and its occurrences are irregular; in Northern Styria it occurs tolerably often in the spring, but rarely in the autumn; in Siebenbürgen it is not rare during the two seasons of migration." Fritsch records it as breeding in some parts of Bohemia, as, for instance, the ponds of Zvolenover and Tizziner, near Frauenberg, near Jicin, and even close to Prague, at Königssaal. It arrives in numbers from the north in October; and those which do not remain to breed leave in February and March.

Mr. G. Cavendish Taylor met with it in the Crimea; and Professor von Nordmann, who found it breeding near Pizounda, in Abasia, records it as common throughout Southern Russia. Canon Tristram observed it in Palestine; and Captain Shelley writes that "the Shoveller is a resident in Egypt and Nubia, and is one of the most abundant species of Duck in the country. They prefer the smaller pools and the banks of the lakes and river, are less shy than the other species of water-fowl, and are therefore most frequently shot, though they are very inferior eating. They are very late in assuming their breeding-plumage; for I have frequently shot them in April still in moult." Jesse saw a flock at Senafé; and Von Heuglin refers to it as a permanent inhabitant of Abyssinia. Mr. Salvin observed it at Zana, in the Eastern Atlas. Mr. J. H. Gurney, jun., found it in the market of Algiers; and Mr. C. F. Tyrwhitt Drake records it as not rare in Morocco, and usually met with in small pools in the open country. It does not extend its range down to Southern Africa.

To the eastward it is found as far as China and Japan. Messrs. Dickson and Ross obtained it at Erzeroom in April. Dr. Leith Adams found it common in Cashmere throughout the year; all the writers on Indian ornithology refer to it as a winter visitor; and Mr. Holdsworth met with it in Ceylon. Dr. Jerdon writes that "it occurs throughout India in the cold weather in small parties, often mixed with Gadwalls and other species, feeding near the edges of tanks, in shallow water, among weeds, chiefly on minute worms and larvæ, which it sifts from the mud. It is often late in leaving this country." It is referred to by the Russian travellers in Siberia. Dr. G. Radde saw it in the market at Irkutsk in September, and writes that at the Tarei-nor the first arrived on the 7th of April, and until the 12th of May they remained in flocks. He shot several males in the Bureja Mountains on the 7th of May. Von Middendorff did not observe it; but Dr. Stubendorff sent a pair to him which he shot in the Sajan Mountains on the 7th of May; and Von Schrenck obtained specimens near the mouth of the Amoor, at Kalgho and Wair, in May. Mr. R. Swinhoe obtained it in Hongkong and Foochow, in China, and also at Amoy, and records it as "abundant in South China and Formosa in winter." Mr. H. Whitely obtained a female at Hakodadi in October 1864; and Temminck and Schlegel record it as very abundant in Japan. I may also add that Dr. Dybowski found it breeding in Dauria; and Mr. Gould records one as having been obtained in Australia by Mr. Coxen, of Yarrundi, which unfortunately was destroyed by rats. In America it is very widely distributed, being found from Alaska far down into Central America. Mr. Dall (Tr. Chic. A. S. i. p. 297) writes that "this species is said to breed at

one point in the canal, between the Island of St. Michael and the mainland. I have never seen it alive, but obtained a skin from one killed at Unalaklik. It cannot be abundant anywhere near the Yukon;" and Mr. Bannister frequently "saw this species among the birds brought in by the hunters of the Fort during the month of May, at St. Michael's." Captain Blakiston records specimens "from the Saskatchewan and Hudson's Bay; also from Great Bear Lake and the Arctic Circle, on the Mackenzie." Mr. Allen speaks of it as found on the Great Salt Lake; and the various American authors record it from most parts of the United States. I did not meet with it in Texas, though Audubon speaks of it as common there in the winter season; but Messrs. Sclater and Salvin record it from Central America as "inhabiting the Lake of Dueñas during the winter, and departing towards the end of March;" and Dr. Sclater writes, "Mr. Gould informs me that he has recently examined specimens of this bird killed near Bogota. Its occurrence as far south as Nicaragua has already been noticed by Prince Bonaparte" (Notes Orn. p. 94). To this I may add that Mr. A. von Frantzius records it from Costa Rica. It has been met with on Cuba by Dr. Gundlach, and also on Bermuda and Jamaica.

Though more particularly a freshwater Duck, still the Shoveller is met with not unfrequently on the coast; but it does not appear at home there, and is more generally found on any sheets of fresh water which are in the open country, especially those which, being overgrown with aquatic plants, give a secure hiding-place to it, and places where the waters have overflowed and covered the country for some distance. It is not particularly shy, and often frequents places where it may be approached by using caution; but it does not appear to herd in such large flocks as many other Ducks appear to do.

It feeds on seeds of various kinds of water-plants, grain, and in the spring various kinds of water-insects, some of which are excessively small; and the peculiar fringe on each side of the mandibles is especially useful in expelling the water which it takes in with the minute insects, which are gathered on the surface of the water and retained, when the water is expelled, by this comb-like fringe.

Audubon, writing on its habits in the United States, says that "the Creoles of Louisiana are well acquainted with this species under the name of '*Micoine*,' the etymology of which I am unable to trace. In that country it arrives both from the westward and from the eastern inland districts, along with the Blue-winged Teal, or at the commencement of autumn. It associates with that species, to which, as well as the Green-winged, the Mallard, the Dusky Duck, and the Gadwall, I should consider it very nearly allied, notwithstanding the peculiar expansion of its bill. The Shovellers remain in the lower parts of Louisiana during the whole of the winter, and depart along with the Blue-wings between the end of April and the middle of May. There, in early spring, they resort chiefly to ponds, where they feed on grasses and their seeds, as well as at times a small kind of onion, the bulbs of which they pull up from the moist grounds on their margins. This may perhaps to some seem strange; but I have long since made up my mind to learn from nature, and believe what is, rather than what philosophers imagine ought to be. Having fed through the night, they collect towards dawn into large bands, and betake themselves to the margins of sand-bars on the Mississippi, where they spend the greater part of the day. At other times I have found them swimming or wading along the muddy margins of ponds and streams, immersing the head and part of the neck, while alternately moving the bill to either

side, in the manner of the Roseate Spoonbill, sifting, as it were, the contents of the soft mud or water, and ejecting the substances unfit for food. Repeated inspection of the stomach has shown me that the Shoveller is not more nice as to the quality of its food than the Mallard or any other of the Duck tribe; for I have found in it leeches, small fishes, large ground-worms, and snails. They never, however, I believe, feed by semiimmersion, like the Mallards and Teals; nor do they dive, unless hard pressed, or when in a sportive mood, when they will dash for a moment beneath the surface."

It breeds in the months of May, June, and July, placing its nest (which consists of a hole scratched in the soil, and lined with a few grass straws and a considerable quantity of down plucked from the bird itself) close to the water, usually near some freshwater pond or lake, though, according to Mr. Benzon, it often in Denmark breeds near the coast and on islands in the fiords. The nest is usually carefully concealed in the high grass or under a low bush, and contains from nine to twelve, according to Naumann sometimes as many as fourteen, eggs. Mr. Benzon informs me that in Denmark the eggs are deposited from the 2nd to the 26th of May; but Mr. Meves found a nest on Öland, containing eight eggs, as late as the 24th of July. Eggs I have in my collection, obtained by Mr. Benzon at Boel, Jutland, are in colour rather paler than those of the Mallard, and very fine in the grain; the colour may be described as greenish grey, very pale and soft in tone. In shape they are longish oval, tapering slightly towards the smaller end, and in size measure from $1\frac{39}{40}$ by $1\frac{12}{40}$ to $2\frac{1}{40}$ by $1\frac{17}{40}$ inch respectively. Mr. Benzon informs me that they sometimes vary in colour to greyish cream; and judging from a large series in his collection the average size is 51 by 37 millimetres, the largest measuring 55 by 38, and the smallest 51 by 36 millimetres.

Dr. E. Rey informs me that he possesses eggs "from Mecklenburg, Hamburg, Denmark, the Island of Gothland, Hiddensee, Oderbruch, the Lakes of Mansfeld, Sleswick, and from North and South Russia. Von Negelein found them in Oldenburg; and Blasius near Brunswick. I found fresh eggs at the Lakes of Mansfeld from the middle of May till the beginning of June, their number varies from eight to ten. I found the average size of thirty-five eggs to be—52·5 by 36·6 millimetres, the largest measuring 55·5 by 35·5 and 54·5 by 38, and the smallest 50·5 by 34·5 millimetres."

The specimens figured are in my collection, and are in full winter plumage; and those described are also in my possession, excepting the male in autumn plumage, which is in the collection of Baron A. von Hügel.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂, *b*, ♀. Leadenhall Market, December 1870. *c*, *d*, *pull.* Boel, Jutland, 1867 (*A. Benzon*).

E Mus. Baron A. von Hügel.

a, ♂, *b*, ♀. Christchurch, Hants, February 1873; *c*, *d*, ♂. Poole Harbour, Dorset, February 1873 (*A. v. H.*). *e*, *f*, *g*. Hiddensee, Germany, winter of 1871; *h*, ♂ *ad.* Galicia, 1872 (*Schlüter*). *i*, ♂. Archangel, June 1872 (*E. R. Alston*). *k*, *pullus.* Perm, Russia, June 25th, 1872.

Genus QUERQUEDULA.

Anas apud Linnæus, Syst. Nat. i. p. 204 (1766).
Querquedula, Stephens in Shaw's Gen. Zool. xii. p. 142 (1824).
Cyanopterus apud Eyton, Monogr. Anat. p. 130 (1838).
Petrocyanea apud Bonaparte, Cat. Met. Ucc. Eur. p. 71 (1842).
Eunetta apud Bonaparte, Compt. Rend. xliii. p. 650 (1856).

The Teals are, as a rule, smaller than the true Ducks, more slender in form, have a longer neck and a narrower bill, and the scapulars and inner secondaries more elongated and pointed. They are very widely distributed, being found in the Palæarctic, Ethiopian, Oriental, Australian, Nearctic, and Neotropical Regions, four species occurring in the Western Palæarctic Region—two being resident, and two being stragglers from the Eastern Palæarctic Region.

These birds frequent marshes, lakes, rivers, &c., being essentially freshwater birds. During the day they prefer to remain quiet in some secluded place, and feed chiefly by night. They feed on grain, seeds, the tender portions of aquatic plants, insects, worms, slugs, &c. They fly well and swiftly; and though not so active on foot, yet they walk with tolerable ease. Their note is a soft quack; but, as a rule, they are rather silent birds than otherwise. They breed either close to or at some distance from water, and place their nests on the ground, depositing numerous small yellowish-white eggs.

Querquedula circia, the type of the genus, has the bill about as long as the head, higher than broad at the base, depressed, and slightly widened towards the tip; unguis small, ovate, decurved at the tip; the extremities of the lamellæ are visible on the edges of the upper mandible, which overlaps and covers the lower mandible; nostrils oblong, small, not placed far forward; wings rather long, pointed, the first quill longest, the inner secondaries elongated and tapering; tail short, slightly rounded; legs short, tarsus compressed, anteriorly scutellate; hind toe very small, with a very narrow membrane; outer toe much shorter than the third, the centre toe rather long; interdigital membrane emarginate; claws small, curved, rather acute.



QUERQUEDULA CRECCA.
VII

QUERQUEDULA CRECCA.

(COMMON TEAL.)

Anas crecca, Linn. Syst. Nat. i. p. 204 (1766).
Querquedula crecca, Steph. Gen. Zool. xii. p. 146 (1824).
Nettion crecca, Kaup, Natürl. Syst. der europ. Thierw. p. 95 (1829).
Querquedula subcrecca, Brehm, Vög. Deutschl. p. 885, t. 42. fig. 4 (1831).
Querquedula creccoides, Brehm, Vög. Deutschl. p. 886 (1831).

Sarcelle d'hiver, French; *Cerceta hiemal*, Spanish; *Marreco*, Portuguese; *Arsa-vola*, Italian; *Krœk And*, *Nork And*, Danish; *Krik And*, Norwegian; *Krick And*, Swedish; *Krückente*, German; *Tschirsk*, Russian.

Mas ad. pileo castaneo, capitis lateribus usque ad nucham nitide viridibus undique linea angusta alba marginatis: mento nigro: dorso cinereo late albo et nigro transvermiculato: corpore subtus fulvescenti-albido, maculis nigris ubique notato: hypochondriis albo et nigro transvermiculatis: subcaudalibus nigris.

Fem. ad. saturate brunnea, dorsi plumis rufo marginatis: macula lorali et gutture toto clare fulvescentibus: corpore reliquo subtus albo, abdomine parum maculato, pectore superiore et hypochondriis rufo et brunneo mixtis.

Adult Male. Crown of the head, extending to the nape, which is slightly crested, cheeks, ear-coverts, sides of the neck, and throat deep chestnut; sides of the head, extending from just before the eye, deep glossy green, margined both above and below by a narrow line of whitish, which is drawn down from the eye to the base of the bill; chin blackish; back grey, everywhere conspicuously vermiculated with black and white; lower part of the back dark brown, strongly washed with grey on the edges of each feather: upper tail-coverts glossy black, narrowly margined with fulvous; scapulars grey, vermiculated strongly with black and white like the back, all the feathers long and lanceolate in shape, some of the outer feathers pure white on the inner web, black towards the tip of the outer, forming a conspicuous patch of black and white; wing-coverts grey, some of the larger ones white, tipped with rusty on the outer web, forming a conspicuous bar; quills greyish brown, with a very narrow whitish edging, secondaries more decidedly grey, the exterior ones black on the outer web, tipped with white, the inner ones metallic green, then one long feather pure grey on the outer web, edged broadly with black, the rest of the secondaries greyish brown, more or less washed with pure grey; under surface of the body whitish, vermiculated with black and white on the lower neck and sides of the body, also on the abdomen, but here much more indistinctly; upper part of the breast thickly spotted with round blackish spots, which are more thinly distributed over the abdomen; under tail-coverts black in the centre, whitish along the edge, and having a cream-coloured patch on each side; bill nearly black; feet brownish grey. Total length 12·5 inches, culmen 1·55, wing 7·0, tail 2·7, tarsus 0·8.

Adult Female. General colour blackish brown, all the feathers margined with rufous-brown, some of the secondaries tipped with white; forehead and cheeks buffy white, thinly streaked with brown; a loral

spot, and throat, clear buff; rest of the under surface of the body whitish, thickly mottled with brown and rufous on the upper breast and flanks, more thinly spotted with brown on the abdomen. Total length 12·5 inches, culmen 1·4, wing 6·8, tail 3·0, tarsus 0·8.

With the exception, perhaps, of the Mallard (*A. boschas*), the present species has the most extended range of any European Duck, being commonly distributed over the entire Palæarctic Region, and even extending into North America. Here its range coalesces with that of the very closely allied *Querquedula carolinensis*, which is so similar in appearance that Professor Schlegel does not recognize any specific difference; but we think that the authors of the 'Birds of North America' have given sufficient characters by which the two species may be identified. In America our Common Teal is only found accidentally on the eastern coast, and, according to Professors Reinhardt and Holboell, has been occasionally obtained in Greenland. In Iceland it is very common, and, as stated by Faber, arrives in the third week in April, departing about the beginning of October. It is distributed over Great Britain, and is found at all seasons of the year. According to Yarrell it is not numerous in Orkney or Shetland. Mr. A. G. More says "It has been found breeding even in the south of England. It is, however, more numerous in the north, and is described as breeding annually in nearly all the districts of Scotland." Mr. Thompson says that "in Ireland it is common round the coast and on inland waters, and is to a considerable extent indigenous." Mr. Harry Blake-Knox also tells us that he believes it breeds in many parts of Ireland.

In Scandinavia Nilsson states that it is very widely distributed, and is found during the breeding-season both in Southern Skåne and also in Norway and Lapland, on low land as well as on the mountains and fells, in these latter high up into the willow-region. Collett says it is common in the province of Christiania, where it breeds in the early part of May. Kjaerbölling says it arrives in Denmark in March or April, and does not leave until compelled to do so by the frost. In Lapland Sommerfeldt found it during summer at the Varanger Fjord; and Dresser met with it abundantly in Northern Finland and on the Lapland frontier, where it was nesting. In Northern Russia it breeds, and is abundant in summer at Archangel and along the Dwina. Throughout the whole of Germany it is common, and is found in many parts during the year. In Belgium De Selys Longchamps says that it is particularly common in the late autumn or the beginning of spring. In France, where it is called the "Winter Teal," it is very abundant during the winter, a few remaining there to breed. In Spain Machado and Guirao record it as found during winter; but our friend Major Irby writes to us that it is very common in that country, and, he believes, resident. In Portugal it likewise occurs. Mr. Vernon Harcourt records it from Madeira; and Mr. Godman says that in the Azores it is common, and a few individuals breed at Flores, but it is not quite so plentiful as the Mallard. Dr. Bolle found it on Teneriffe, and says it is sometimes common in the winter in the Canaries.

In Algeria, according to Loche, it is very abundant, particularly during the winter. Mr. C. A. Wright says that in Malta it is not uncommon in spring, and from November to March. They sometimes also appear during the strong north-west winds which prevail in June. In Sicily, Malherbe states, it appears in winter in great numbers. Count Salvadori has sent us the following note:—

"These birds are very numerous during both the spring and autumn migrations, when they may be met with wherever there is water. A good many remain during the cold season, and abound especially in the marshes of the Maremma and the salt lakes of Sardinia and Sicily. I do not know whether they ever breed in Italy."

In Savoy Bailly states that it is found throughout the year. According to Von der Mühle and Lindermayer it is a common bird in Greece, a few breeding in the northern portion. Lord Lilford found it very abundant in winter in the Ionian Islands, arriving about the end of September, and disappearing in March. Messrs. Elwes and Buckley record it as numerous in Turkey; and Von Nordmann states that it is found all the year round on the Black Sea.

Dr. Tristram procured it in Palestine during the winter; and Mr. Wyatt at Wady Gharandel, in the Sinaitic peninsula. Mr. S. Stafford Allen says it is very common at Alexandria; and Capt. Shelley writes us that it is "the most abundant of the Duck tribe in Egypt and Nubia, and probably remains to breed there, as I have met with it plentifully in the beginning of May." Dr. von Heuglin states that it is common on the Nile and Red Sea, and also observed on the Tana Lake, in Abyssinia, and the marshes of Kordofan. Mr. W. J. Blanford also occasionally met with it on the highlands of Abyssinia. From Trebizond the Common Teal was sent by Mr. Keith Abbott, and it doubtless occurs in the intervening countries between Persia and Cashmere. On the lakes of this latter country Dr. Leith Adams found it pretty common all the year; and Dr. Jerdon considers it "the most abundant as well as the earliest visitor to India." He has noticed it as early as September, and it is late before it leaves the country. Pallas has given the range of the present species as all over Russia, Siberia, in every part as far as Kamtschatka, breeding everywhere.

According to von Schrenck, it is one of the commonest Ducks in the Amoor country; but, as stated by Radde, *Anas glocitans* is much the commonest species of the two on the central part of the Amoor; but he observes that the Common Teal is very abundant at the headwaters of that river and in South-west Siberia. The observations they record respecting its habits coincide entirely with those we give elsewhere.

Père David says it passes Peking in large numbers in spring and autumn; and Mr. Swinhoe records it from China. He has likewise found it in Formosa. According to Temminck and Schlegel, it is abundant in Japan; and Mr. H. Whitely also obtained it from the birdcatchers near Hakodadi.

The Teal is more especially a freshwater Duck; and although it is occasionally to be found on the salt water, this may be regarded as exceptional. It is so common a bird that but few field-naturalists will be unacquainted with its habits. During the daytime it frequents ponds, pools, or sheets of water in the marshy country, where the rank growth of flags or rushes affords it a shelter, and loves to sit either motionless on the bank or to float on the surface of the water. Towards the close of the day, however, it becomes restless, and as soon as the first shades of evening set in bestirs itself in search of food, being essentially a night-feeding bird.

Its disposition is gentle, evincing such affection for its mate, that when the one is shot the other bird will often return almost immediately to the same place and meet a similar fate. Several instances of this were witnessed by Dresser when collecting in North Finland, where the Teal is common. The parent birds are also very solicitous about the safety of their young, as

the following anecdote of that excellent field-naturalist the late Mr. St. John will show. We extract it verbatim from Macgillivray's 'British Birds':—

"I once, when riding in Ross-shire, saw an old Teal with eight newly hatched young ones cross the road. I got off my horse, and lifted all the little birds up and carried them a little distance down the road to a ditch, for which I concluded they were making, the old bird all the time fluttering about me, and frequently coming within reach of my riding-whip. The part of the road where I first found them passed through thick fir-wood with rank heather, and it was quite a puzzle to me how such small animals, scarcely bigger than a half-grown mouse, could have got along through it. The next day I saw them all enjoying themselves in a small pond at some little distance off, where a brood of Teal appeared every year."

Naumann, who, respecting its occurrence in Germany, merely says that it is one of the commonest Ducks in all suitable localities, gives the following account of its habits:—

"They visit during the daytime the shallow shores, amongst the weeds in morasses, or the shallow places in pools, on the bottom of which many weeds grow, which they can reach with the bill without diving. Thus they frequent from choice small pools, flooded meadows, marshes, and marshy ponds, preferring them to larger sheets of water, and they are seldom seen on rivers, whereas they are often found inhabiting the swampy green shores of small streams. Towards evening they are particularly restless, flying about from pool to pool in the meadows, or to the ponds formed by the rain- or snow-water collecting in the fields. Here they hunt after worms or grain, and in spring feed much on barley and oats, also on the seeds of *Panicum glaucum*, *P. viride*, &c. After the Mallard they are the commonest Ducks in such pools in the fields when the snow has melted; and when these are not situated near well-frequented roads, and are large, they remain there also during the day. In the late summer and autumn they feed chiefly on grain, and are fond of the lentil-like seed of *Potamogeton marinus*, *P. pectinatus*, &c., and are particularly fond of the seeds of some of the rushes and grasses—for instance, that of *Festuca fluitans*, and visit places where it grows in abundance, in the evening, remaining there till daybreak. They fatten on this nourishing food, and their flesh then becomes very delicate. In warm countries they are said to frequent the rice-fields for this purpose; but they do not visit the oat- and barley-fields with us in the harvest-time, but are satisfied with the various seeds of the plants growing in the marshes. They often run along the banks, seeking food, or walk about grass meadows, near the water, picking up worms and slugs. When swimming on the water, one often sees them carefully picking up small articles of food, with the neck and head held down and pushed forward. When thus employed a flock will spread over a considerable surface, and no one gets in the way of the other; or if this happens they settle it with a little angry quacking, and the competition for food bears no further consequences. If they are disturbed, all rise at once on the wing, or at times single ones remain sitting quite still, waiting the course of events.

"They feed on all sorts of small worms, larvæ, water-insects, small freshwater shell-fish, tender shoots of plants, seeds of many marsh- and water-plants, barley, and oats, and but seldom feed on small fish-spawn, little fish, or tadpoles."

As we before stated, the Common Teal is found, during summer, from the extreme north of Scandinavia to the far south of Europe, breeding wherever it finds a suitable locality, although much more abundantly in the north than in the south. In England, where it breeds in many if not

most parts, we have not had an opportunity of taking its nest; but in northern Finland Dresser has repeatedly procured the nests of this Duck, which he found on the ground amongst the grass, oftenest under some low bush, which served to conceal it, and sometimes at a considerable distance from the water. The eggs, from eight to ten in number, are oval in shape, measure $1\frac{31}{40}$ in length by $1\frac{12}{40}$ in width, and are pale yellowish-white in colour, not unlike old ivory. The female incubates; but during the breeding-season the males, who consort together, are never found very far distant from the sitting female. When the young are hatched, both male and female appear to be equally unremitting in their attention to them.

Mr. Robson, of Ortakeny, Turkey, informs us that "the Common Teal is abundant in Turkey, Asia Minor, and Europe, and can be seen in the game-shops throughout the whole winter, but more commonly during the spring and autumn migrations. In the summer they retire to breed in various localities, near lakes, in the interior of Asia Minor and Europe."

Our Plate is taken from an adult pair of birds, in our collection, the male being from Sweden, the female from Cookham, in Berkshire.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. ♂. Sweden, May 1st, 1868 (*Moeschler*). *b*. ♀. Cookham, April 2nd, 1870 (*J. Ford*). *c*. ♀. Amoy, Oct. 15, 1866 (*Swinhoe*).

E Mus. H. B. Tristram.

a. Wroxham, Norfolk (*H. B. T.*). *b*. R. Jordan (*H. B. T.*). *c*. Malta (*H. B. T.*).

GARNANEY TEAL.

QUERQUEDULA CIRCIA.

QUERQUEDULA CIRCIA.

(GARGANEY TEAL.)

Anas querquedula, Linn. Syst. Nat. i. p. 203 (1766).
Anas circia, Linn. Syst. Nat. i. p. 204 (1766).
Querquedula circia, Steph. Gen. Zool. xiii. p. 143, pl. 51 (1824).
Querquedula glaucopteros, Brehm, Vög. Deutschl. p. 882 (1831).
Querquedula scapularis, Brehm, Vög. Deutschl. p. 883 (1831).
Cyanopterus circia, Eyton, Monogr. Anat. p. 130 (1838).
Pterocyanea circia, Bonap. Cat. Met. Ucc. Europ. p. 71 (1842).
"*Anas scapularis*, S. Müller," Schlegel, Mus. Pays-Bas, *Anseres*, p. 49 (1866).

Garganey, *Summer Teal*, English; *Sarcelle d'été*, French; *Marzajola*, Italian; *Patito*, *Cerceta*, Spanish; *Marreco*, *Marrequinho*, Portuguese; *Sarsella*, Maltese; *Kriechente*, German; *Krækand*, Norwegian; *Årta*, Swedish; *Atling*, *Sommer krikand*, Danish; *Tschirok*, Russian.

Figuræ notabiles.

Gould, B. of Eur. v. pl. 364; Yarr. Brit. B. iii. p. 181 (1843); Naum. Vög. Deutschl. xi. Taf. 303; Kjærb. Orn. Dan. Taf. xlvii. (Suppl. 26); Schl. Vog. Nederl. pl. 297; Gould, B. of Gt. Br. pt. vii.

♂ *ad.* pileo nigricanti-brunneo, versus nucham viridescente, fronte magis badio tinctâ, plumarum scapis nonnullis albidis: lineâ superciliari distinctâ ab oculo antico usque ad nucham productâ, albâ; facie laterali et collo toto dilutè badiis, ubique lineis parvis albis striatis: dorso brunneo, viridescenti-cinereo marginato, dorso postico clariùs cinereo lavato: dorso imo et uropygio brunneo, cinereo lavato, et fasciis conspicuis albis transnotato: tectricibus alarum dilutè et pulchrè canis, majoribus latè albo terminatis fasciam alarem conspicuam formantibus: remigibus brunneis, scapis albis, tectricibus primariorum cinereo-brunneis albo marginatis, ad basin nitidè viridibus albo terminatis, pennis interioribus brunneis, albo marginatis et versus basin cinereo lavatis: secundariis brunneis, intimis (dorsalibus) longissimis acuminatis extus clarè cinereis albo marginatis et fasciis longitudinalibus albis et viridi-nigricantibus lineatis: caudâ brunneâ, angustè albo marginatâ, et obsoletè vermiculatâ: mento nigricante: pectore toto fulvescente, ubique fasciis brunneis vermiculato: ventre albo, hypochondriis nigro delicatè vermiculatis, crisso et subcaudalibus brunneo irregulariter maculatis et vermiculatis: subalaribus albis, minimis cinerascentibus: plumis axillaribus albis: rostro nigro, ad basin mandibulæ carneo: pedibus brunneis, membrano nigricante: iride brunneâ.

♀ *ad.* brunnea: pilei plumis fulvo angustè marginatis: dorsi plumis fulvescenti-albo conspicuè marginatis, scapularibus pallidè ferrugineo lavatis: tectricibus alarum cinerascenti-brunneis albo marginatis, majoribus conspicuè albo terminatis fasciam alarem latam formantibus: remigibus brunneis, primariis externis fulvescenti-brunneis, ad basin sordidè viridibus, secundariis albo marginatis: caudâ brunneâ albo marginatâ et pogonio interno plerumque albo: maculâ lorali, supercilio distincto ab oculo anticè

ducto, et regione malari fulvescenti-albis: genis et regione auriculari minutè brunneo striolatis: lineâ brunneâ ab oculo postico suprà regionem paroticam productâ: gutture fulvescenti-albo, parte imâ brunneo striolatâ: pectore antico brunneo marmorato: corpore reliquo subtus fulvescenti-albo, crisso et subcaudalibus brunneo punctatis: hypochondriis brunnescentibus, fulvido marginatis: subalaribus medianis albis, minimis brunneis.

♂ *æstiv.* feminæ simillimus, sed tectricibus alarum canis et fasciâ alari viridi conspicuâ, pectore summo clarè ferrugineo semper distinguendus.

Pull. saturatè umbrinus, dorso superiore paullò fulvescente: supercilio lato et facie laterali fulvescenti-ferrugineis, lineâ distinctâ à basi rostri per oculum ductâ et maculâ ad regionem auricularem posticam positâ saturatè brunneis: dorso medio et uropygio laterali maculis quatuor flavicanti-albis ornato: gutture toto et pectore antico fulvescenti-ferrugineis, hôc paullò cinerascente: corpore reliquo subtus flavicanti-albo.

Male in full plumage. Crown of the head brown, somewhat glossed with green on the hinder part, and exhibiting on some of the feathers a slight rusty edging; forehead dull chestnut, with white centres to the feathers; sides of the face and neck dark chestnut with white centres, giving it the appearance of being thickly streaked with white; chin blackish; from the fore part of the eye to the hinder part of the nape, a very distinct white line; back brown, slightly tinged with bluish ashy; lower part of the back and rump more clearly washed with the last-named colour, and covered with irregular bars of white; tail dark brown, with narrow white edgings to the feathers; all the upper wing-coverts clear blue-grey or pale lavender, the greater ones tipped with white, forming a conspicuous alar bar; primary-coverts brown, edged with white and tinged with grey, the primaries themselves brown, with conspicuous white shafts, the secondaries green at the base, tipped with white, forming two bars of green and white, the first-named being much the broadest, the inner secondaries glossed slightly with greenish and tipped with white, the innermost or dorsal quills long and pointed, lavender-coloured on the outer web, with a broad streak of white down the centre of the feather, bordered on each side with greenish black and again margined with white; chest sandy brown, covered with irregular lines of blackish; lower part of the breast and belly white, with a slight tinge of rusty colour occasionally, the vent and under tail-coverts vermiculated and spotted with dark brown; flanks finely vermiculated with lines of brown; some of the lower ones broadly edged with grey, and so forming a patch on the sides of the vent; under wing-coverts for the most part white, those round the edge of the wing ashy grey; axillary plumes white; bill black, underneath at the base flesh-coloured; feet brownish, membrane blackish; iris light brown. Total length 14 inches, culmen 1·5, wing 7·7, tail 3·1, tarsus 1·1.

Female in full breeding plumage. General colour brown, very dark on the head; all the feathers of the back margined with sandy brown and fulvous white, the rump being especially dull-coloured, and the edgings on this part of the body dark brown; wing-coverts ashy grey, the greater ones tipped with white, forming an alar bar; quills dark brown with white shafts, the external secondaries bordered with white, forming with the wing-coverts a second alar bar, the innermost secondaries also edged with whitish; tail brown, edged with white, some of the outer feathers having much more white on them than in the male; feathers round the eye and over the ear-coverts, as well as the hind part of the cheeks, dark brown; a loral spot, a distinct eyebrow drawn from the fore part of the eye nearly to the nape, malar region and entire throat buffy white; rest of the sides of the face and neck, as well as the lower part of the throat, brownish white, covered with little streaks of darker brown; upper part of the chest and sides of the lower part of the neck deep rusty-brown, the latter varied with white; rest of the under surface of the body buffy white, the breast almost bare in many places, the flanks distinctly mottled

with brown and white; under wing-coverts white, the feathers round the edge of the wing brown. Total length 15 inches, culmen 1·5, wing 7·2, tail 3·0, tarsus 1·1.

Female in spring plumage. Brown, beautifully mottled with buffy white, with which colour all the feathers of the back are broadly margined; on the secondaries this tinge is so strong as almost to amount to rust-colour; head plainly tinged with sandy; wing-coverts clear ashy, and the quills glossed with greenish and very plainly edged with white; under surface of the body pure white, the upper breast tinged with sandy and mottled with dark brown; under tail-coverts and flanks streaked with brown.

Male after breeding. Very like the female, generally brown in colour, with paler edgings to the feathers of the upper surface, and the loral spot and eyebrow marked as in the female, but not so plainly indicated; under surface rusty white, with a very strong tinge of chestnut on the upper part of the chest. In all the above respects it resembles the old female, but may always be distinguished by the bright green bar on the wing and by the lavender wing-coverts, characters which are never seen in the female.

Obs. A young male, shot on the 10th August, much resembled the old female, but the colours were clearer, the speculum green, and smaller wing-coverts blue-grey, tail with imperfect point. (*W. Meves, in epist.*)

Young in down. Above dark brown, with a slight fulvous tinge on the upper part of the back, the fore part of the forehead also tinged with buff; on the middle of the back, and also on each side of the rump, two yellowish-white patches; sides of the face rusty brown, with a very distinct eyebrow; through the eye a line of dark brown drawn from the base of the nostril and extending backwards above and below the ear-coverts, nearly enclosing the latter; throat and fore part of the chest rusty white, rather more inclining to ashy brown on the breast; rest of the under surface of the body yellowish white.

The Garganey Teal is widely distributed during summer, being found breeding in more or less profusion over the greater portion of the Palæarctic Region. In winter it visits India, where it is at this season very common, and appears to extend even into the Indo-Malayan subregion. In the cold weather it is also found in North-eastern Africa.

The following is Mr. A. G. More's note respecting its breeding in Great Britain:—"The nest has several times been found in Norfolk, where Mr. Stevenson tells me that a few pairs breed annually in the district of the broads on the eastern side of the county. Mr. F. Bond has informed me that the Garganey bred also in the fens of Cambridge and Huntingdon before they were drained." Along the west coast of England it is rare, and is very little commoner in the southern counties. Mr. J. Brooking Rowe says that it is scarce in Devon; and Mr. Rodd observes that it is "a rare visitor in Cornwall; a few summers since several were obtained in the neighbourhood of Penzance in very beautiful plumage, and preserved." Mr. Stevenson has kindly forwarded us the following note:—"I am happy to say the Garganey still breeds in small numbers on most of the 'Broads,' by which I mean that a pair or two may be seen any summer on most of those waters, and, were they but protected by law, when they return in spring, would be much more plentiful. From the nature of the places they frequent, their nests are but seldom found; but Professor Newton has eggs from Hoorton Broad, where all such species are strictly preserved. I have also received the old and young procured there in July when flapper-shooting. They make their appearance in Norfolk about the middle of March, and then, too often, in perfect plumage fall victims to the gunner. I never knew of one occurring in winter."

Lord Lilford writes, "a fine male bird was killed in this county (Northants), near Thrapstone, in the summer of 1869; and I have heard of others having been seen." Mr. R. Alston writes as follows:—"This Duck is rare in Scotland. It has occurred in Stirlingshire, East Lothian, and Wigtownshire." Thompson records it as of very rare occurrence in Ireland, and he only knew of one really authentic instance. Since that date we believe that it has been met with in that island, but is still very rare. Lord Lilford tells us that he has reason to believe that it breeds there, but as yet he has no proof positive of the fact. It is included by Professor Newton among the birds of Iceland, with the accompanying qualifying statement:—"The positive assertion of Herr Preyer, that on the 16th of June 1860 he shot this species at Myvatn, induces me to admit it here, but not without hesitation. The evidence afforded by the eggs brought to him a few days previously I look upon as singularly inconclusive."

Kjærbölling states that it is plentiful in Denmark, breeding more commonly in Jutland than on the islands; and Mr. A. Benzon has sent us some notes on the species in that country, which we print below. Mr. R. Collett only records one specimen as having been procured near Christiania, in May 1862, another having been observed on the same occasion. According to Nilsson the Garganey occurs in the south of Sweden, sometimes, though rarely, in the east, and extends its range far up north. In Skåne it is not rare, in Södermanland, however, very rare; and it has been seen near Torneå. At Gothenburg it is common, and breeds there, as also at Calmar, and here and there in Östergöthland. Mr. Meves writes to us, "we found it nesting rather numerously at Hjelstaviken, in Skåne and on Öland." In Finland Dresser found it by no means rare, and when travelling northward in the spring, just at the time of migration, saw them almost daily in the small streams, lakes, or ponds near the road. At Uleåborg they are also found, and probably breed near there; and Dresser shot one on the Kemi river, between Uleåborg and Torneå. This Duck does not, however, extend its range as far north as the Common Teal. In Livonia and Esthonia Meyer records it as common.

In Germany it is a summer visitant; and Naumann's notes will be found below. The same remarks apply to the low countries. De Selys Longchamps says that it passes through Belgium in spring and autumn. With regard to its occurrence in Luxembourg, De la Fontaine remarks as follows:—"Passes on its migrations, and is then numerous. A very few remain to breed here." Godron says that in Lorraine it is common enough on the rivers in spring. Krœner observes that it is, in Alsace and the Vosges, a sedentary from March to October; inhabits the lakes, rivers, and marshes; constructs its nest in marshy districts, where it lays ten or twelve eggs of a yellowish white. Degland and Gerbe remark that it breeds in several parts of France, but seldom in the south as stated by Jaubert and Barthélemy-Lapommeraye. According to Bailly it is rarer in Savoy than the Common Teal, and arrives there in March or early in April, sometimes in pairs and sometimes in small flocks, remaining a short time before proceeding northward. A few, however, remain there to breed.

Mr. Howard Saunders writes to us:—"The Garganey occurs in winter, but does not, so far as I am aware, remain to breed, in Southern Spain, nor did I find it in spring in the marshes at the mouth of the Ebro. Dr. Companyo says that some remain to breed in the marshes near Perpignan." In Andalucia Major Irby says that it is scarce, and he never saw it but in the month of March. Lord Lilford writes:—"I never met with it myself in Spain; but it is common on the

Albufera of Valencia." The Rev. A. C. Smith met with it in Portugal, where he says it was declared to be common. In Malta Mr. Wright records it as "not uncommon in spring and autumn, and occasionally in summer." Count Salvadori writes:—"About the end of February and early in March great flocks of these Ducks arrive in Italy; and, strange to say, not one is to be seen in autumn. Many breed on our larger lakes and marshes in Lombardy, Tuscany, as also in Sicily." Lord Lilford states as follows:—"Appears in great numbers about the end of February in Epirus and Corfu; remains till April. I think a few pairs breed in the country." Von der Mühle observes:—"This is one of the few Ducks that breed in Greece, in the swamps of Thermopylæ, and other places; but many do not seem to breed, as I have observed them in small flocks all the summer through on the small pieces of water, where they are so little shy that they allow themselves to be approached within gunshot." Lindermayer further states:—"It is true that it winters in all parts of Greece; but it is only from the end of March that it is found very common on all lakes and swamps. Many pairs may breed on the Kopai Lake and in Thermopylæ." Messrs. Elwes and Buckley record it as "most plentiful in Bulgaria, where it seems to take the place of the Teal to a great extent, and remains to breed." Von Nordmann says it is very common in Southern Russia; and Major Irby tells us that it used to be very abundant in the marshes at Inkermann in spring, where he observed it during the Crimean war. From Trebizond it has been sent by Mr. Keith E. Abbott.

Canon Tristram does not seem to have met with this Duck in Palestine; but many notices have been published respecting its occurrence in North-eastern Africa. Captain Shelley writes:—"We met with this bird in tolerable abundance at El Kab towards the end of April, and shot one specimen." Dr. von Heuglin also says it is common in North-eastern Africa and Arabia. Loche writes as follows:—"Very common in Algeria on the lakes, rivers, and chotts. Its motions are lively and easy, and its habits particularly sociable. It is not shy, and can be easily approached. Its flight is rapid and lofty. Often in the autumn they unite in large flocks, and remain together until the spring." Mr. Osbert Salvin, in his paper on "Five Months' Birds'-nesting in the Eastern Atlas," says:—"I shot a Garganey in the Medjerdele, just below Djebel Dekma, during the first week in April."

With regard to its distribution in Siberia, Messrs. Dybowski and Parrex found it common near Darasun, in Dauria. Dr. von Middendorff records it as shot at the mouth of the Uda. Dr. Radde says it is one of the rarer birds of the Amoor. He procured a few in April on the Udir river. At Tarei-nor they are not uncommon, and the first arrived there in the night between the 12th and 13th April 1856. It breeds, though rarely, in the marshes of the Tarei-nor. Mr. Swinhoe, writing from Amoy, says the Garganey "would seem from its unfrequency on the coast to be quite an inland winter visitant;" but more recently he observes that it "probably breeds in South China, but is rare; has occurred also in Formosa." It appears to be very plentiful in India during the winter. Hodgson met with it in Nepal; and Dr. Leith Adams records it as common on the Punjaub rivers and lakes during the cold season. Major Irby in his paper on "Birds observed in Oudh and Kumaon," remarks as follows:—"Frequently seen in the cold season; exceedingly common in February and March; I caught some young, half-fledged, in the month of September." Mr. Blyth writes:—"In Lower Bengal the two commonest species of Ducks during the cold season are *A. acuta* and *A. querquedula*; but I have never

heard before of either species staying to breed south of the Himalaya" (Ibis, 1859, p. 464). He also further observes:—"*Querquedula circia* breeds sparingly, no doubt, in India, as well as in Burma and Tenasserim." The last reference alluded to by Mr. Blyth is a letter addressed to him from Moulmein by Major Tickell, in which that gentleman observes:—"Another singular occurrence is the breeding of the Garganey in this part of the country (Moulmein). I have a young one now alive, which was brought to me, just fledged, from a pond or small lake about twelve miles off." The Garganey likewise extends into the Indo-Malayan subregion, the Leyden Museum containing specimens from Java and the Philippines, and even Celebes.

Respecting the habits of this bird in Germany, Naumann states that they never remain there during the winter. In August the families collect together in flocks, most of which leave in October, a few remaining into November, after which all have disappeared. If the season be a mild one, they reappear in March, but generally not before April, and are then (excepting those that pass onwards, which are in small flocks) generally in pairs. They usually travel by night, seldom in the daytime, and in the autumn migrate towards the south-west, often flying with other Ducks, but still keeping apart with others of their own species. When travelling quickly they fly high, keeping the same order as the other Ducks (*Anas boschas*, *A. strepera*, *A. acuta*, &c.); but being generally in smaller numbers, they often fly in a crooked line, and not in the plough-shaped flight. They frequent the fresh water, and on the sea-shore are only found where there are calm shallow bays the muddy bottoms of which are left uncovered when the tide is out; and these they only visit during their migrations. If marshes and freshwater lakes are near, they only visit the sea when driven from these, and never go far from the shore. . . . . Wherever they take up their abode there must be muddy water covered with vegetable growth; they will not remain where the shores are open and the water clear. They are therefore but seldom seen on the rivers, or only where there is some quiet corner with the banks covered with green; and they avoid the larger streams altogether. In the quiet of the night they visit the pools and puddles in the fields, caused by rain or the thawing of the snow. Sometimes they settle during the day on the fields far from water. During the daytime they hide in the reed growth of the marshes where it is not too dense, and prefer the true reeds (*Arundo phragmitis*) less than the flags (*Poa aquatica*, *Sparganium acorus*, *Iris carex*, and the *Scirpus juncus*) and other plants (*Equisetum*, *Sium*, *Phelandrium*, *Euphorbia palustris*, &c.). At all times of the year they are very fond of *Festuca fluitans*, both when it has not shot up high and covers the water with its floating leaves, and when it has grown tall and has ripe seeds. This Duck loves to frequent flooded meadows when the grass is about a foot high and does not grow too thick amongst the water, and this latter is not more than about six inches deep."

Mr. Benzon, of Copenhagen, writes, "This Teal, which in Danish is called *Atling* or *Sommer krikand*, breeds here and there in Denmark in morasses and inland sheets of water, and is particularly abundant in Jutland, whence I have both the young in down and eggs on which the females have been captured. The number of eggs varies from six to thirteen. The earliest nest contained eleven eggs, and was taken on the 29th of April, 1865, and the latest, containing seven eggs, on the 21st of May, 1864. The largest number (thirteen) in one nest was taken on the 10th of May 1867, and again on the 8th of May 1868. A female with

ten young in down was captured on the 25th of June. In Jutland it is generally found breeding earlier than the Common Teal, and is commoner at that season of the year; but during migration the latter species is much more abundant on the fiords and sheets of water, and forms a large portion of the number of Ducks caught."

With regard to its occurrence on the island of Borkum, Baron Droste writes as follows:—"Its nest has once been found on Borkum, but was unfortunately destroyed. It is now only observed now and then on migration, generally in the spring. They do not appear to pass through here in the autumn, as only a few scattered families were observed in the late summer. In the spring they appear in pairs late in April or early in May, after the other Ducks have passed. They frequent the freshwater or salty ponds and rivulets on the islands; and I know no instance of this Duck visiting the shores. They are very tame, and soon get accustomed to the sight of human beings, and are satisfied with the smallest sheets of water. When unmolested they can be approached within a few paces without flying up. Their note is a harsh *knack*; but in the spring the Drake calls often and loud, making a harsh note. Like the Common Teal, they fly very swiftly, but can be easily distinguished by their light wing-coverts."

The food of the Garganey consists of worms, insects, and insect-larvæ, small frogs, occasionally small fishes, also of grain of different sorts, seeds of many of the water-plants, buds, leaves, and the soft ends of leaves, and soft succulent roots. They are not difficult to keep tame; and if given the run of a pond covered with reeds and water-plants, they will do well with what they can pick up there, if a little grain and pieces of bread are thrown out to them.

The nest is a mere depression in the ground, generally in a grassy mound in the morass or on a meadow, seldom far from water; and the eggs are from eight to ten, sometimes twelve in number. The following account of the breeding of the Garganey was contributed to Mr. Hewitson's well-known work by the late Mr. Hoy:—"The Garganey commences laying its eggs about the middle of April. The nest, which is composed of rushes and dried grass mixed with the down of the bird, is placed upon the ground in low boggy situations, amongst the coarse herbage and rushes in marshes, and on the borders of inland waters and rivers. The eggs are from eight to ten in number, and differ from those of the Teal chiefly in the larger proportion of yellow which prevails in their surface-colouring."

The eggs of the Garganey are so very much like those of the Common Teal, that it is scarcely possible to distinguish them. If any thing, they are of a more creamy yellow colour than those of that bird. We have before us a series from Dresser's collection, all from Denmark, which measure on an average $1\frac{35}{40}$ by $1\frac{14}{40}$ inch, are pure oval in shape, and rich creamy yellow in colour.

A cream-coloured variety of the Garganey seems to occur occasionally. Von Nordmann says:—"I have several times seen near Odessa a pale yellowish white variety;" and Mr. J. H. Gurney tells us that he has a cream-coloured one shot at Surlingham on the 30th of July 1858.

The adult male is described from a beautiful specimen in Canon Tristram's collection, killed near Cambridge in spring; and the adult female from a Danish specimen given to us by Mr. A. Benzon, to whom also we are indebted for the young in down. The descriptions of the female in spring dress and of the male in "Duck" plumage are taken from examples belonging to Mr. J. H. Gurney, jun. The figures are drawn from a pair of Mr. Benzon's Danish birds. With

respect to the length of time which the male Garganey remains in the plumage of the female, we have received the following note from our friend Mr. J. H. Gurney, jun.:—"A tame one which my father had alive in 1851 began to lose the full male plumage on the 16th of July, completed the process on the 4th of August, began to reassume it on the 28th of December, and completed the reassumption on the 18th of the following February, having been twenty-one weeks in the plumage of the female, whereas a Common Teal on the same water was only nine weeks and two days in it. Much may have been due to confinement; but, of nine sorts of Ducks, the Garganey remained the longest in the habit of the female."

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. Pesth (*H. E. D.*). *b, c, d, e, f, g, h.* Denmark (*A. Benzon*).

E Mus. J. H. Gurney, jun.

a, b. Leadenhall Market. *c, d.* Bridlington, June 1st and 2nd, 1868 (*Jones*). *e.* Moscow, September 14th, 1869 (*J. H. G.*)

E Mus. H. B. Tristram.

a. ♂. Cambridge, March 20th, 1862 (*H. E. Fox*). *b.* Leadenhall Market (*J. H. Gurney*). *c.* Mirzapore (*W. G. Brooks*). *d.* Algiers, March 15th, 1856 (*H. B. T.*).

QUERQUEDULA FORMOSA.
VIII

QUERQUEDULA FORMOSA.

(BAIKAL TEAL.)

Anas formosa, Georgi, Reise Russ. Reich. p. 168 (1775).
Querquedula formosa, Steph. Gen. Zool. xii. p. 151 (1824).
Anas glocitans, Pall. Acta Holm. xl. p. 22, pl. 33. fig. 1 (1779).
Mareca? *glocitans*, Steph. Gen. Zool. xii. p. 140 (1824).
Querquedula glocitans, Vig. Trans. Linn. Soc. xiv. p. 559 (1825).
Anas baikal, Bonn. et Vieill. Enc. Méth. i. p. 158 (1823).

Canard glousseur, French.

Mas. ad. pileo medio et gutture nigris: facie laterali et gutture imo fulvescentibus: pectore superiore pallide lilacino, maculis ovalibus nigris transnotato: dorso pulchre cinereo angustissime vermiculato.

Fem. ad. brunnea, dorso plumis rufo marginatis: macula lorali, gutture et corpore subtus albidis parum fulvescentibus: pectore superiore et hypochondriis rufo et brunneo marmoratis.

Adult Male. Crown of the head, back of the neck, entire throat, and a band extending from the eye across the face, narrowing somewhat as it joins the throat, black; face buff, as also the sides of the neck, extending downwards under the throat, all this buff face being margined narrowly with white; the crown of the head also bordered from behind the eye with a very distinct white line, below which a broad band of metallic green passes along the sides of the head and joins a demicollaret of the same colour, which crosses the nape; on each side of the hinder portion of the neck a band of black passes in a backward direction; parallel with this a white band traverses the sides of the neck and joins underneath; back beautiful blue-grey, somewhat tinged with brown, everywhere most minutely vermiculated with black and white; the outer scapulars grey, like the back, the inner scapulars elongated, lanceolate, black down the centre, white on the inner web, and rufous on the outer web; lower part of the back brown, tinged with blue-grey; wing-coverts brown, some of the greater ones edged with rufous, forming a narrow band; quills greyish brown, the secondaries black on the outer web, glossed with metallic green near the base, tinged with buff towards the tip, which is pure white along the apex of the feather, so that the coloration of the secondaries gives the appearance of a bar across the wing; the innermost secondaries greyish brown, margined along the edge with alternate narrow lines of white and black; tail greyish brown; upper part of the breast pale fawn-colour, strongly tinged with lilac in certain lights, and washed here and there with blue-grey, everywhere marked with more or less distinct oval black spots; belly whitish, tinged with buff, the flanks blue-grey, minutely vermiculated like the back; vent black, as are also the under tail-coverts, which, however, are marked with bay on the sides, and are white at the tip, with slight vermiculations; bill dark bluish brown; feet light greyish blue, darker on the web. Total length 15·5 inches, culmen 1·5, wing 8·5, tail 3·6, tarsus 1·0.

Adult Female. Brown; some of the dorsal feathers black, margined with rufous; a white loral spot very distinct; cheeks and ear-coverts buffy white, thickly spotted with brown specks; under surface of the

body buffy white, mottled with dark brown and rufous on the upper breast and flanks. Total length 15·0 inches, culmen 1·45, wing 7·8, tail 3·5, tarsus 0·9.

The Baikal Teal is very distinct from the Common Teal; and the male is to be distinguished at a glance by its black head and buff-coloured face, in addition to the many other distinctive characters, which are shown in the Plates of the two species. The females are much harder to determine; but the hen Baikal Teal is always larger in size.

This elegant bird may be hereafter found to be an occasional straggler into Europe, but at present it has only been obtained twice in France, as recorded by Messrs. Degland and Gerbe:—

"About the end of November 1836 five specimens were killed at intervals of a few days on the banks of the Saône, near Epervans, by a man called Sauvin, who shot for a livelihood; four of these were sold for food, as Common Teal, to an innkeeper at Châlons; the fifth was happily saved from destruction by an intelligent collector, and was stuffed by M. Martin, a chemist, at Châlons. This precious specimen is now in the interesting collection of Dr. de Montessus. The appearance of this Duck in the basin of the Saône was in consequence of tempestuous winds and heavy rains, which had caused great floods. According to M. Canivet, this species has occurred in the low country of La Manche, near the sea-shore. Two specimens, a male and a female, procured from a sportsman near Carentan, were by him given to the Count de Steade, in whose rich collection they still are."

We are indebted to the Russian travellers for all the information we possess respecting its habits. It appears to visit North-eastern Asia in the summer and breed there, proceeding southwards on the approach of winter. At this time of year Mr. Swinhoe and Père David procured it in China (the latter also finding it in spring), where it appears with other species of Ducks, and can often be purchased in the markets. Mr. Swinhoe records its occurrence in Formosa; and in Japan it also occurs, the Dutch travellers having brought back a complete series of specimens; but Mr. Whitely does not seem to have succeeded in procuring it. Dr. Jerdon includes it among the 'Birds of India,' stating that it is very rare, the only specimens known to have occurred in that country being some purchased by Mr. Blyth in the Calcutta bazar.

The following particulars respecting the habits of the present species are extracted from the works of the Russian naturalists.

Dr. Middendorff writes:—

"Although the commonest Duck on the Boganida (70° N. lat.), it did not extend its range as high as the Taimyr river. It was not observed before the 12th June on the Boganida. On the 3rd July seven fresh eggs were found in a nest on the river bank, under a willow bush. On the 24th July the young in down began to have feathers appearing on the head, shoulders, and wings, but were unable to fly on the 4th August. On the 28th July a male was shot, which had lost his full plumage. The last birds were observed up to the 23rd August on the Boganida. This bird was equally abundant in the Stanowoj mountains (Aim river), and at Udskoj-Ostrog, where it arrived early in May. . . . . The young in down are easily recognized by the spot at the root of the bill and the stripe by the eye, which agree exactly with those of the female, but are yellowish instead of white; the feathers which are shooting out on the breast have broad and rather bright reddish-brown edges. The eggs are small, bluish yellow in colour, the smallest 50 millims. long by 35 millims. in the widest part.

"When in flocks these Ducks were very shy, but less so when paired. They make a great noise, as they continually utter their loud clucking note."

Dr. Radde (Reisen im S. v. Ost-Sibirien, pp. 368, 369):—

"It arrives very early; and the first specimen was procured as early as 26th March, 1856, on the Tarei-nor. I saw the first specimens in the Bureja mountains on the 28th March, 1858, and on the 4th April met with the large flocks above referred to, in speaking of *A. crecca*, on the Uril brook; and they remained in flocks until the 19th April. On the 24th April only small flocks were observed. When the waters rose I often saw both this Duck and the Common Teal sitting in small flocks on the floating ice blocks, and floating down stream on them. *Anas glocitans* is not particular as to its society; and one morning, about the middle of April, I saw, in a small morass above the Udir rivulet, *Anas boschas*, *A. crecca*, *A. glocitans*, *A. clypeata*, *A. acuta*, and a few *A. penelope* sitting quietly close together after a meal, resting, and I crept close to them under cover.

"After the 7th May this Duck was not seen any more. It is generally rare near Lake Baikal, and does not remain there during the summer."

Ornithologists must not confound the Eastern Teal with the Bimaculated Duck of British authors; for it is now tolerably certain that the specimens on which this bird was named are nothing more than hybrids, and the true *Querquedula formosa* has no right to a place in the list of British-killed birds.

The figures in the Plate have been drawn from living examples in the Zoological Society's Gardens. The descriptions are taken from specimens in our own collection, the male being one of Dr. Radde's specimens, and the female obtained by Dr. Middendorff in Eastern Siberia.

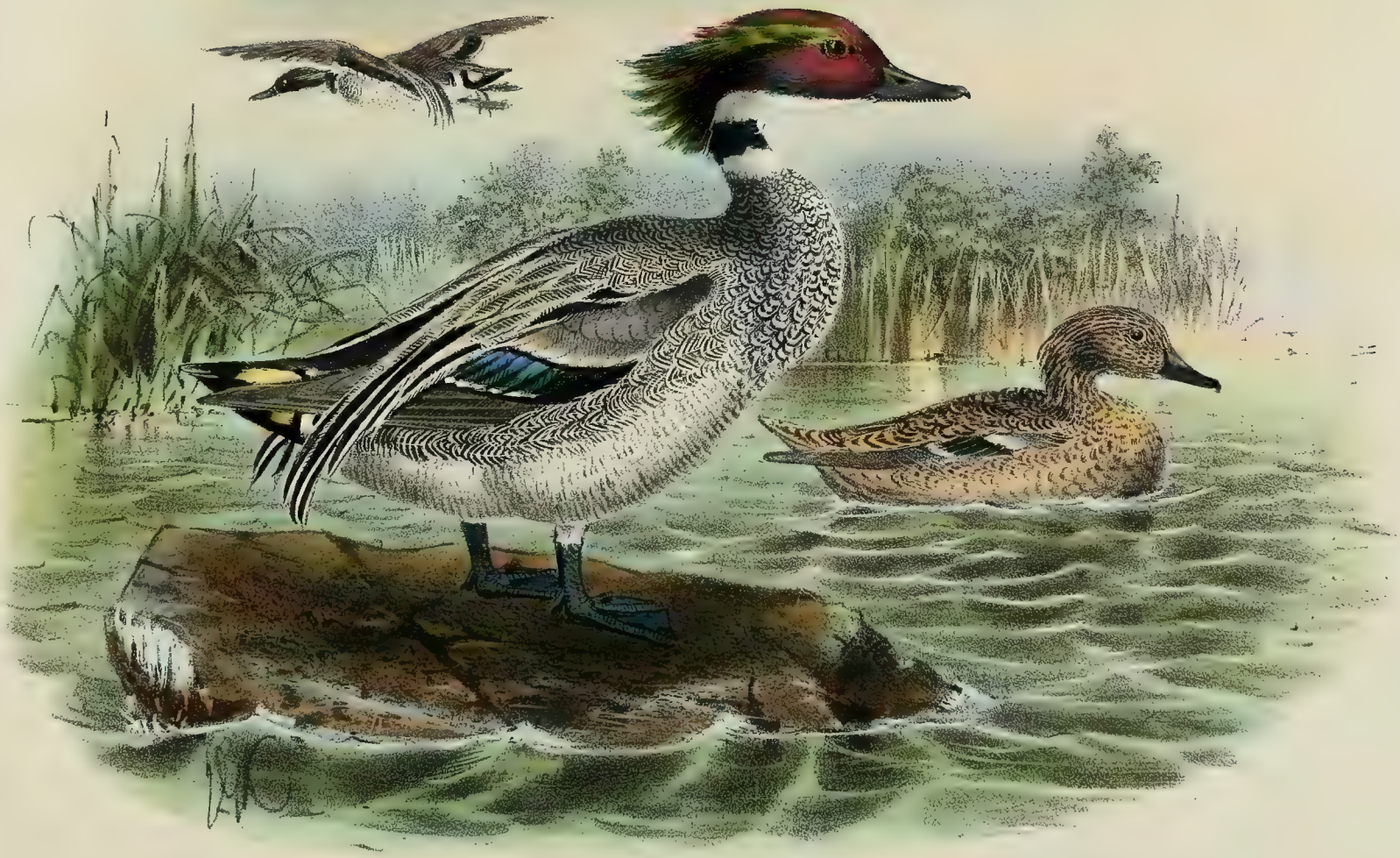
In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a (male). Tunka, Siberia, May 4th, 1856 (*Radde*). *b* (female). Eastern Siberia (*Middendorff*).

E Mus. H. B. Tristram.

a, b. Lake Baikal (*Middendorff*).



QUERQUEDULA FALCATA.

XVI.

QUERQUEDULA FALCATA.

(FALCATED TEAL.)

Anas falcata, Georgi, Reise Russ. Reich. p. 167 (1775, descr. orig.).
Querquedula falcata, Bonap. Rev. Crit. Orn. Eur. de Degland, p. 193 (1850).
Eunetta falcata, Bonap. Comptes Rendus, xliii. p. 650 (1856).
Anas falcaria (err.), Pall. Reise Russ. Reich. iii. p. 701 (1776).
Querquedula falcaria, Eyton, Monogr. Anat. p. 126 (1838).

References:—Brandt, Descr. et Icon. Anim. Rossic. Nov. pl. iii. (1836); Middend. Sibir. Reis. pl. xxi. fig. 2 (1851).

Mas valde cristata: pileo medio castaneo, facie laterali purpurascenti-ænea, regione postoculari ad collum posticum producta, æneo-viridi, cristam pulcherrimam formante: torque collari viridi: gutture toto et torque altero collari albis: dorso superiore griseo-brunneo, ubique lineis albis irregulariter transfasciato, dorso postico saturate brunneo, obsoletius albo transfasciato: scapularibus elongatis, albidis cinereo vermiculatis, ad basin nigris, maculam exteriorem nigram formantibus, pennis dorsalibus pogonio interno late albis: tectricibus alarum superioribus pulchre cinereis, majoribus versus apicem albicantibus: remigibus grisescenti-brunneis versus apicem saturatioribus, secundariis extus ad basin saturate viridi nitentibus, interioribus falcatis grisescenti-brunneis margine exteriore scapisque albis, pennis exterioribus plerumque velutino-nigris viridi nitentibus, interioribus cinereo transvermiculatis: tectricibus supra- et infracaudalibus longis nigerrimis, viridi nitentibus: rectricibus grisescenti-brunneis versus apicem albicantibus: collo superiore et laterali ut dorsum colorato, forsan latius marmorato: pectore superiore albo et brunneo transversim variis, fasciis ubique latioribus et distinctioribus: pectore imo et abdomine albis angustissime brunneo transvermiculatis: hypochondriis elongatis albis brunneo distincte transfasciatis: macula ad latera caudæ posita lactescenti-fulva ad basin nigra: rostro nigro: pedibus saturate plumbeis.

Fem. pileo toto brunneo, plumis omnibus rufo marginatis, sub certa luce purpurascentibus: facie antica brunneo punctata: dorso irregulariter fulvo et brunneo marmorato: ala ut in mari colorata, pennis secundariis interioribus elongatis sed non falcatis: gutture toto brunneo minute punctato et striolato: pectore superiore ferrugineo purpurascenti-brunneo transversim fasciato: corpore subtus reliquo fulvo obsolete brunneo variato: subalaribus et pennis axillaribus pure albis.

Mas juv. saturate brunneus, plumis dorsalibus paullo ut in femina rufo marginatis: pileo ut in femina colorato, sed capite summo brunneo viridi nitente: tectricibus alarum cinerascentibus, minoribus obsolete fulvo marginatis: ala ut in femina adulta colorata, sed vitta alba alari paullulum fulvo tincta: pectore superiore ferrugineo, brunneo obsolete marmorato, sub certa luce purpurascente: corpore subtus reliquo fulvescente, punctis brunneis undique notatis: hypochondriis ferrugineis brunneo magis conspicue marmoratis: subalaribus albis cinereo variis, plumis axillaribus albis.

Adult Male. Crown of the head deep chestnut; sides of the head bronze-purple; all the feathers extending from the posterior portion of the eye along the sides of the head crested, and developing into a beautiful

green mane on the back of the nape; entire throat, extending backwards on to the sides of the neck and downwards, half intersecting a green collar round the neck, white; below this green collar another broad ring of white encircling the neck; upper portion of the back transversely vermiculated with greyish brown and white; scapulars greyish white, minutely vermiculated, the outer webs marked with black at the base, forming a small horizontal bar, the inner webs white in the dorsal scapulars; lower part of the back dark brown, obsoletely vermiculated with greyish; tail-coverts black, very long, and entirely hiding the tail; wing-coverts beautiful clear grey, the greater ones shading off into white at the tips, and thus forming a bar; quills greyish brown, turning into darker brown along the edge and toward the tips; secondaries darker brown, externally beautiful metallic green, the innermost secondaries very long, sickle-shaped, and reaching to the end of the primaries, the shafts and external edges of these feathers whitish, the outer ones being entirely velvety-black, but the inner ones less black and minutely vermiculated; tail grey-brown; the upper breast waved with alternate bars of white and grey, thickest on the lower part of the throat and sides of the neck; flank-feathers long, and finely vermiculated; entire abdomen obscurely vermiculated with white and grey; under tail-coverts black and very long, reaching beyond the tail; on each side of the tail a very distinct cream-coloured patch, the bases of the feathers being black, showing a beautiful black bar before the last-named patch; under wing-coverts and axillary plumes pure white; bill greenish black; feet dull blue-grey, darker on the web; iris brown. Total length 19 inches, culmen 1·8, wing 10·0, tail 3·0, tarsus 1·35.

Adult Female. Head striped with purplish brown, each feather margined with fulvous; sides of the face and neck dotted with small brown points and stripes; throat paler, varied with small brown markings; general colour of the back rufous, more or less broadly and irregularly varied with brown; lower portion of the back brown, with a few obsolete fulvous edgings; wing coloured as in the male, but the sickle-shaped feathers not developed, these being represented by a few elongated and slightly curved feathers, for the most part brown, the outer webs inclining to grey at the base, the outer margins white; upper part of the breast deep rufous, with a few purplish brown cross-markings, these being thickest on the lower part of the neck and sides of the throat; rest of the under surface of the body fulvous, covered everywhere with very indistinct brown mottlings; sides of the body and under tail-coverts rather deeper rufous, with plainer longitudinal brown stripes and irregular mottlings; under wing-coverts and axillary plumes pure white. Total length 16 inches, culmen 1·8, wing 9·0, tail 3·4, tarsus 1·2.

Young Male. In general coloration resembling the old female, but altogether of a darker brown, and less mottled with rufous, the head and back being distinctly glossed with green; the wing coloured as in the adult female, but having obsolete fulvous edgings to the wing-coverts, and the white tips to the greater coverts also somewhat tinged with fulvous; the under surface of the body is pale fulvous, covered with small spots of brown; the upper part of the breast and flanks more rufous, and mottled with brown. Total length 15 inches, culmen 1·65, wing 9·3, tail 3·0, tarsus 1·25.

The Falcated Teal is scarcely a typical *Querquedula*, by reason of the extraordinary development of the mane on the neck, of the inner secondaries (not the scapulars, as some authors have termed these sickle-shaped feathers), and especially of the upper and lower tail-coverts, which are abnormally long, reaching beyond the tail.

The true home of this beautiful Duck is Eastern Siberia and Japan, whence it migrates southward in winter, ranging into China. Mr. Swinhoe has procured it at Peking and Shanghai. At the former place Père David also says it passes in great numbers in spring and autumn.

Mr. Swinhoe has also obtained it in Formosa. Pallas gives its habitat as the northern latitudes from the Jenesei throughout all Eastern Siberia, more frequently in the Trans-Baikal lakes and through all the districts of the Lena. Professor Brandt, who has written an excellent memoir on this species, says that it was brought from Kamschatka by Von Kittlitz; and the Dutch naturalists have obtained it in Japan.

Middendorff states that in Siberia "it arrived at Udskoj-Ostrog on the 3rd of May, and on the 14th of May was observed on the Utschur. It breeds abundantly in the Stanowoj mountains, nearly as high as the summit. On the 4th of August the young at Udskoj-Ostrog were full-grown and feathered, excepting the wing-quills, which were shooting."

Schrenck (Amur-Reise, p. 480) writes as follows:—

"*Anas falcata* is the commonest Duck throughout the Amoor country. According to Pallas, it is one of the first to arrive in the spring in Siberia. At the Nickolaieffsk Post I shot the first specimen in the spring of 1855, on the 6th (18th) May; but it must occur there as early as the latter part of April, as Middendorff saw it arrive at Udskoi-Ostrog on the 3rd of May, and at Utschur on the 14th. On the 28th of May I observed it at Borbi, above the Marinskin Post, in pairs, the male being in full plumage. The old male which Mr. Maack procured on the 24th of May (5th of June) at Albasin, on the Upper Amoor, also was in full plumage, and had not moulted. In the summer of 1856 I shot on the Iai river, on the 1st (13th) of June, an old female, which was without a male, and was probably engaged in incubating. More than a month later, on the 6th (18th) of July (1855), Mr. Maack shot at the mouth of the Ssungari an adult female in very old and worn plumage, but showing no sign of moulting.

"Middendorff observed young birds of this Duck at Udskoi-Ostrog, on the 4th of August, with the quills just shooting. The above-mentioned young female, with wing-feathers still imperfect, I shot on the 22nd of August, at the mouth of the Komar river, on the Amoor. I found young birds, with the wing-feathers fully grown, at the Nickolaieffsk Post, on the 8th (20th) of September, but on the 19th of September (1st of October) they showed no signs of the new full plumage, whereas one young male, shot on the 20th September, 1846, on the Ielofka river, in Kamschatka, by Mr. Wossnessenski, showed a couple of half-grown feathers on the shoulder. These young birds were, in the autumn of 1854, in numerous small flocks of from three to five individuals, probably portions of broken-up families, on the Kamr and Litsch rivers, and on the small tributaries of the Amoor, a little above the Nickolaieffsk Post.

"On the upper part of the river I found this Duck, like *Anas crecca*, swimming along the grassy banks and carried down by the current seeking food, querulously uttering a low quacking note. Here, on the 20th of September, on a small river near the mouth of the Urutschi river, I procured in this manner three of these Ducks, within a very few minutes, without moving from the place."

Radde remarks:—"I mostly obtained adult males in full plumage. . . . . The first of these Ducks arrived in the night of the 12–13th of April at Tarei Nor. The stomachs of those shot on the 13th I found full of quartz pieces, and only a few shoots of plants at the opening. In the Central Amoor *A. falcata* arrived as soon as the 4th of April, 1858; on the plains above the Bureja mountains, on the 2nd of May, they were mostly paired, and after the 9th only paired birds were to be seen. In Central Irkut they did not arrive before the 15th of April. As early

in June I only saw males in the Irkutsk market, I judged that the females had already bred in their hiding-places. . . . . This species certainly leaves earlier than most of the freshwater Ducks. Early in September they must commence their autumn migration. After the 5th they were not to be seen in the Irkutsk market at all."

The present species apparently wanders on rare occasions into European limits. Professor Newton kindly informs us that it has occurred once or twice in Sweden; and Mr. Meeves also tells us that a specimen (a male) is at present in the Museum at Stockholm, which was procured by the late Mr. Dyhr at the end of April 1853, near Skellefteå. Mr. Dyhr stated that a second bird was seen at the same time, which probably was the female.

It has also been obtained near Vienna. Herr von Pelzeln kindly informs us that a male in summer plumage was shot on the Neusiedler Lake in September 1839, by Herr H. Kopp, surgeon, of Aperlau.

We are fortunate in being able to describe an egg of this rare Duck, now in Dresser's collection, and obtained by him from the St.-Petersburg Museum. It was taken on the 8th of June at Tolstoi-mir, on the Jenesei river, Siberia. In colour it is pale creamy white, resembling that of the Common Wigeon's egg; in texture it is very smooth, and in shape longer and more pointed than the egg of the last-named bird. It measures $2\frac{9}{40}$ inches by $1\frac{1}{2}$ inch.

We have taken our description and Plate from a fine pair of birds in our own collection, the old male being one procured by Gustav Radde, at Tunka, on the 8th of May, 1859, the female having been presented to us by Mr. Swinhoe, by whom it was shot at Shanghai in March 1869. To the latter gentleman we are also indebted for the loan of the specimen of the young male described above. It differs from the female chiefly in the spotted character of the under-surface, and in the generally darker tone of the plumage. The head is slightly glossed with green. From an examination of Mr. Swinhoe's specimen it is evident that the bird figured by Middendorff (Sibir. Reise, pl. xxi. fig. 2) as the female *Anas falcata* is really the *young male*.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. ♂. Tunka (*G. Radde*). *b*. ♀. Shanghai (*Swinhoe*).

E Mus. R. Swinhoe.

a. ♂ juv. Shanghai (*R. S.*).

E Mus. H. B. Tristram.

a. ♂. Banks of the Amoor River (*Leadbeater*).

E Mus. Lord Walden.

a. Lake Baikal.

Genus DAFILA.

Anas apud Linnæus, Syst. Nat. i. p. 202 (1766).
Dafila, Stephens in Shaw's Gen. Zool. xii. p. 127 (1824).
Trachelonetta apud Kaup, Natürl. Syst. p. 115 (1829).
Phasianurus apud Wagler, Isis, 1832, p. 1235.
Querquedula apud Selby, Brit. Orn. ii. p. 311 (1833).

This genus is represented in the Palæarctic, the northern portion of the Ethiopian, the Oriental, Nearctic, and Neotropical Regions, only one species inhabiting the Western Palæarctic Region. In many respects they are so closely allied to the Teal that they have by some authors been included in the same genus. They differ chiefly in having a much longer and more slender neck and a longer tail, the central rectrices being much elongated. They are freshwater Ducks, resembling the other freshwater species in general habits; but they are more often found on large sheets of water. They swim with ease, and are graceful in their carriage; but they do not walk well on land. Their note is softer than that of the Mallard; and they are not noisy birds. They place their nest on the ground, under a bush, or amongst the grass, constructing it of a few grass-straws and down, and deposit numerous pale greenish-grey rather elongated eggs.

Dafila acuta, the type of the genus, has the bill about as long as the head, higher than broad at the base, gradually depressed toward the end, where it is rather wider than at the base; unguis small, broadly oblong, decurved; lamellæ continued to the edge of the bill; nostrils placed near the base of the culmen, large, oval; trachea with the tube equal, slightly contracted towards the inferior larynx, which has a medium-sized bulb on one side; wings long, pointed, the first quill longest, the inner secondaries and scapulars elongated and pointed; tail long, the central rectrices much elongated; legs moderate, the tibia bare for a short distance; tarsus anteriorly scutellate; hind toe moderate, with a very narrow membrane; anterior toes moderate, joined by a membrane, which is slightly emarginate; claws moderate, slender, rather acute, slightly arched.

PINTAIL
(♀ and young)
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PINTAIL

DAFILA ACUTA

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DAFILA ACUTA.

(PINTAIL.)

Anas longicauda, Briss. Orn. vi. p. 369 (1760).
Anas acuta, Linn. Syst. Nat. i. p. 202 (1766).
Le Pilet, Buff. Ois. vol. x. p. 62 (1786).
Anas alandica, Sparrm. Mus. Carls. iii. t. 60 (1786).
Anas sparrmanni, Lath. Ind. Orn. ii. p. 876 (1790).
Anas caudacuta, Leach, Syst. Cat. M. & B. Brit. Mus. p. 38 (1816).
Dafila caudacuta, Steph. in Shaw, Gen. Zool. xii. p. 127 (1824).
Trachelonetta acuta, Kaup, Nat. Syst. p. 115 (1829).
Anas longicauda (Briss.), Brehm, Vög. Deutschl. p. 868 (1831).
Anas caudata, Brehm, tom. cit. p. 869 (1831).
Phasianurus acutus, Wagl. Isis, p. 1235 (1832).
Querquedula acuta, Selby, B. Orn. ii. p. 311 (1833).
Dafila acuta, Eyt. Cat. Brit. B. p. 60 (1836).
Querquedula caudacuta, Macg. Man. Brit. Orn. ii. p. 170 (1840).
Dafila longicauda, Brehm, Naumannia, 1855, p. 297.
Dafila caudata, Brehm, ut suprà.

Pilet, French; *Rabijunco*, Portuguese; *Pato careto*, *Pato rabudo*, Spanish (*Irby*); *Codone*, *Campigiana*, Italian; *Silfiun*, Maltese; *Spiessente*, *Spitzente*, *Pfeilschwanz*, German; *Pijlstaart*, Dutch; *Spidsand*, *Rumpeand*, *Grœsand*, Danish; *Grasönd*, *Långviev-gräönd*, Icelandic; *Spidsand*, *Stjertand*, Norwegian; *Stjertand*, *Spjutand*, Swedish; *Schilochwost*. Russian.

Figuræ notabiles.

Buff. Pl. Enl. pl. 954; Stephens, tom. cit. pl. 49; Werner, Atlas, *Palmipèdes*, pl. 41; Naumann, Vög. Deutschl. pl. 301. figs. 1–3; Gould, B. of E. pl. 365.

♂ *ad.* suprà cinereus, albido conspicuè transfasciatus: scapularibus elongatis, velutino-nigris, linealiter conspicuè fasciis duabus albis strigatis: tectricibus alarum supracaudalibusque imis clarè cineraceis, illarum majoribus pallidè ferrugineo terminatis: remigibus cineraceis, intùs pallidè isabellinis, secundariis intùs cinerascenti-brunneis, extùs metallicè viridibus, latè albo terminatis, intimis clarè cineraceis, medialiter nigricantibus: caudâ nigricanti-brunneâ, rectricibus duabus mediis valdè elongatis, proximis gradatim elongatis extùs cinereo lavatis, exterioribus cineraceis: pileo undique brunneo, subtùs usque ad gulam producto, temporibus cinereo lavatis: collo postico nigricante, viridi lavato: strigâ utrinque per collum laterale ductâ et corpore subtùs toto albidis, pectore et corpore laterali dorso concoloribus et eodem modo transfasciatis: crisso et subcaudalibus nigris: rostro nigricanti-plumbeo: pedibus cinereis: iride lutescenti-brunneâ.

♂ *æstiv.* suprà brunneus, irregulariter albo transfasciatus: pileo summo nigricante, facie laterali rufescenti-

brunneâ, genis posticis et collo laterali albicanti-cineraceis minutè nigricanti-brunneo striolatis: gutture ochrascenti-albo, immaculato, collo imo minutè nigricanti-brunneo notato: corpore reliquo subtùs sericeo-albo, minutissimè et irregulariter brunneo punctato: abdomine cinerascenti-brunneo transfasciato: collo laterali et corporis lateribus conspicuè brunneo et fulvescente transfasciatis: alis ut in ptilosi hiemali coloratis, sed secundariis elongatis dorso concoloribus.

♀ *ad.* præcedenti similis, sed suprà marmorata, plumis omnibus fulvo limbatis et irregulariter maculatis: alis cinerascenti-brunneis, primariis ut in mare coloratis: tectricibus alarum fulvo limbatis, majoribus minùs conspicuè albo terminatis, secundariis rufescente lavatis et albido terminatis: rectricibus brunneis fulvo marginatis et irregulariter fasciatis: pileo colloque totis rufescenti-brunneis, vertice latiùs: facie laterali et collo inferiore angustiùs nigricanti-brunneo striolatis: corpore reliquo subtùs fulvescenti-albo, brunneo indistinctè striolato, corporis lateribus magis conspicuè marmoratis.

Adult Male in spring plumage. Crown and nape dark umber-brown, each feather margined with lighter brown; chin, face, sides of the head, and fore part of the neck dull reddish brown, the sides of the latter having purplish red reflections; back of the neck blackish brown, with greenish reflections; on each side of the neck a broad white line, running from the nape downwards, and joining the white on the breast; lower part of the neck behind and back white, marked with transverse black lines; rump and upper tail-coverts dirty white, barred and marbled with dull brown; the two central tail-feathers much elongated, and narrowing off to a point, being blackish brown in colour, the next in order similarly coloured, also somewhat elongated and pointed; the outer feathers dark grey, margined with dull white; quills dull grey, greyish brown on the outer web and tip; secondaries broadly tipped with white, and having the outer web rich metallic green, forming a conspicuous alar patch, elongated inner secondaries and scapulars black, margined with white, some of the latter transversely marked at the base like the back; wing-coverts dove-grey, the larger ones tipped with ferruginous, forming a red bar above the speculum; underparts white, flanks barred with black like the back, and the abdomen towards the vent indistinctly barred with dull greyish brown; crissum and under tail-coverts black; beak blackish, sides dull lead-blue; feet greyish black; iris orange-brown. Total length 2 feet, culmen 2·2 inches, wing 11·2, tail 7·5, tarsus 1·6.

Adult Male in summer (Archangel, 31st July). Head, neck, and underparts generally as in the adult female, except that the abdomen is duller in colour and less marked; back dull dark brown, each feather having one or two irregular dirty white bars, and some being irregularly vermiculated with that colour; rump washed with grey, tail similar in colour to that in the bird last described, but the two central feathers are but slightly elongated; wings also as in the last-described stage of plumage, but the elongated secondaries and scapulars are shorter and blunter, and in colour dark grey, black along the centre, some of the latter being marked like the back; flanks greyish brown, every feather having broad yellowish-white bars; under tail-coverts as in the female.

Adult Female (Hakodadi). Crown and nape reddish brown, each feather having a blackish brown centre, giving a lineated appearance; rest of the head and neck yellowish white, lineated with dark brown; back, wing-coverts, scapulars, rump, and upper tail-coverts dark brown, edged and marked with dirty white, tail dark brown, margined with sandy yellow and crossed with V-shaped bars of yellowish white, the two central feathers being somewhat elongated; quills dusky brown; secondaries washed with rufous, here and there tipped and margined with white; inner secondaries not much elongated, larger wing-coverts tipped with white; underparts dirty yellowish white, each feather having the centre dull brown; flanks and under tail-coverts similar, but rather more broadly marked with brown; bill and feet slate-grey; iris brown.

Nestling (Cholopyain-Ost, Archangel, 23rd June, 1872). Crown dark brown, this colour passing along the back of the neck to the back, which latter is also dark brown, tending in shade to olive-brown; on each side of the back, from the wing to the tail, a white line; loral space dull brown, from the base of the bill to the nape two indistinct brown lines, one passing through and the other below the eye; underparts dull white.

The Pintail occurs throughout Europe, Asia as far south as Ceylon, Northern Africa, and America down from the British possessions into Costa Rica. In Great Britain it is met with during the winter season; but a few may remain to breed. Mr. A. G. More writes that "the nest has been found by Mr. John Hancock, who informs me that he has known the Pintail to breed spontaneously in a swamp in Northumberland, which swamp is now drained; but Mr. Hancock believes that the bird still breeds occasionally on the Northumbrian moors."

In Scotland, Mr. Robert Gray writes, "although nowhere a common species, it has occurred in almost every county. It is now many years since I made my first acquaintance with it in the East Lothian, where I happened to shoot a brace out of a flock one winter evening as I sat under shelter of a rock on the sea-coast near Dunbar. The birds were flying noiselessly in a line, and about to pitch down on a freshwater stream at its junction with the sea, where I had seen them two nights before; the two I shot were females.

"In the western counties the Pintail is a scarce species, some winters passing without a single specimen being seen or obtained by any of the shore shooters. A young male, which I examined, was shot on the river Cart, near Glasgow, in January 1864; and in several other instances stray specimens have come into my hands. In only one case, however, have I been able to trace it into the Outer Hebrides—a specimen having been shot on the farm of Milton, in the island of South Uist, by Mr. A. Carmichael, in the winter of 1869–70. As a rule, therefore, this bird is found mostly on the east coasts, ranging from Berwickshire and East Lothian to the Shetland Islands, where it is found in spring, and again in autumn. In many parts of Orkney it is said to be pretty abundant, especially in Sanday, where it occurs both in the sea and in the fresh water. Mr. Angus has informed me that a pair of Pintail Ducks were seen in the loch of Slains, in Aberdeenshire, on the 4th of May, 1866, and that he shot at a pair (probably the same birds) three days afterwards as they flew up the Ythan, nearly opposite Waterside. Mr. Angus also states that he examined an immature male in the collection of Mr. John Wilson, at Methlic, which had been shot by that gentleman on the loch at Haddo House on 10th March, 1867."

In Ireland it is recorded by Thompson as "a regular winter visitant to the coasts and inland waters."

Professor Reinhardt records it as "accidental, but not very rare, in North Greenland, as well as in South Greenland;" and Dr. Walker obtained specimens at Godhavn. It is found in Iceland, where, according to Faber, "it arrives on the coast at the end of April, and reaches Myvatn the beginning of May, where it breeds pretty commonly. Probably of general distribution throughout the country. Disappears at the beginning of September." It is said to be not rare in summer on the Færoes; and probably a few breed there. In Scandinavia it is common; and in Norway, according to Mr. Collett, "it occurs in the interior during migration, and breeds here and there in the lowlands, as, for instance, at Land, and on the Fiskumvand at Eker, and more often on the fell-lakes; northwards it breeds commonly up to and within the Polar circle;

and a few remain on the southern coasts of Norway throughout the winter." In Sweden, Dr. Sundström writes, "it is found breeding during the summer season in the northern parts of the country, and breeds on most of the sheets of water in Lapland. It is, however, also met with breeding in many parts of Southern Sweden, as, for instance, in eastern Skåne, Blekinge, eastern Småland, on Öland and Gottland; and specimens have been shot during the summer season on lake Tåkern, in Östergöthland. During migration it occurs in small flocks, occasionally in company with Widgeon and other Ducks, on the southern coasts of Sweden; and I have seen and shot it near Malmö, in Skåne, in September and October, by laying in wait for it as it flies in the evening from the sea up to the small inland pools. In Södermanland, where, as elsewhere, it is called 'Spjutand,' it is said to be by no means rare during the two seasons of migration, and in the spring will fly down to stuffed decoy-birds. It occurs here and there in the interior during migration, and has been shot in Nerike in the month of August. During the summer season it is generally met with near fresh water, but not always, as on the 15th of August 1872 I caught a breeding male which had moulted his quills and was unable to fly, on an island far out on the coast of Åland." I met with it throughout Finland, and especially numerous in Uleå Län, where I found it breeding both near the coast and on the islands off Uleåborg. Von Nordmann writes that it breeds commonly in Karelen; and I have reason to believe that it also breeds a good deal further south than Uleåborg. It is common near Archangel; and Mr. Sabanäeff states that "it principally inhabits the north of Russia, but breeds, though rarely, on the lakes of the Sarpa, in the Governments of Kieff and Charkoff; and, according to Eversmann, it is tolerably common on the lakes in the Kirghis steppes. It arrives in Central Russia and Perm early in April, but leaves first of all the water-fowl, in September, and even at the end of August. It nests about the end of May, on the edges of the lakes and marshes, and deposits from six to nine eggs." According to Mr. Taczanowski it is "common in Poland during the two seasons of migration; and a few remain to breed there." Borggreve records it as not uncommon in North Germany. According to Wiepken it breeds in Oldenburg, and it has also been found breeding in the Greifswald and near Danzig. Gloger thinks it doubtful if it ever breeds in Silesia. Borggreve himself observed it during the summer on the Baltic coasts, and breeding, though rare, in Mittel-Oderbruch and on the Krakower lake, in Mecklenburg. Baldamus states that it breeds in Anhalt; and Mr. A. von Homeyer found several pairs breeding near Liegnitz, on the Kunitzer lake.

Regarding its occurrence in Denmark Mr. A. Benzon, of Copenhagen, writes as follows:— "*Anas acuta*, here commonly called *Spidsand*, *Stjertand*, or *Rumpeand*, breeds generally throughout the country; and I have eggs both from Jutland, Hesselö, and the Cattegat, as also from the southern islands of Moen and Lolland, taken late in May and early in June. According to Müller it is not rare on the Færoes; but I have no eggs from there. I have them, however, from Aalesund, in Norway, and Myvatn, in Iceland." In Holland and Belgium it is common during migration; and Baron von Droste Hülshoff writes that "it occurs on Borkum during migration, leaving, however, in November, and returning in April. A few pair may possibly breed on the mainland." It is found in France only during the winter months, and is especially numerous in the northern provinces in March during its passage. Professor Barboza du Bocage records it as "common" in Portugal; and Lord Lilford, Major Irby, and Mr. Howard Saunders all state that it is not uncommon in Spain during the winter season. In Savoy it is common during the

seasons of migration. Savi records it as found in Tuscany from the autumn to the spring; Doderlein as very abundant about Modena and in Sicily; and Salvadori as tolerably numerous in Sardinia, where it occurs throughout the winter. Mr. C. A. Wright states that it is occasionally found in Malta during the winter season. Lindermayer writes that it occurs in Greece, though not in flocks, and he did not observe it on the islands. Lord Lilford, however, records it from the Ionian Islands as "tolerably common in winter, but very wary, and difficult to kill." In Western Greece Mr. Hudlestone found it very rare. In Southern Germany it but rarely breeds, being met with seldom, except on passage. In a note just to hand from the Ritter von Tschusi Schmidhofen, he informs me that "it breeds in Bohemia on the Kestran and Nakri ponds, not far from Frauenberg, but only visits Mähren (Moravia) and Silesia during migration; and the same may be said as regards most other portions of the Austrian Empire, where it seldom breeds."

In Turkey and on the Black Sea it is found during winter. Messrs. Elwes and Buckley state that it remains in Bulgaria till the end of April. Mr. G. C. Taylor found it abundant near Ismid. Von Nordmann records it from Southern Russia during the winter; and Ménétries during the same season at Bakou, on the Caspian. Canon Tristram found it on the brook Kedron, in Palestine; and Mr. C. W. Wyatt at Wády Gharandel, in the peninsula of Sinai. It winters in Africa; and Captain Shelley found it "very abundant in Lower Egypt and the Fayoom, but much less common on the Nile, above Cairo. It may usually be met with in large flocks on the lakes, or feeding in company with other kinds of ducks, along the banks of the canals, and more rarely in the small pools." In Algeria, according to Loche, it arrives in the winter, and remains only till the end of February. Mr. J. H. Gurney, jun., observed it during the winter; and Mr. Taczanowski saw it in the markets of Ajmokra and Constantine. It does not appear to have occurred on the Azores or the Canaries.

To the eastward it is met with throughout Siberia to Japan, and down to Ceylon. Messrs. Dickson and Ross procured it in April at Erzeroom; but it does not seem to breed so far south. Dr. Leith Adams found it common on the lakes of Cashmere during the winter season; and Dr. Jerdon states the same as regards India in general. Major Irby met with it in Oudh and Kumaon in large flocks; and Captain Beavan speaks of it as "abundant about Umballah, but not observed in Lower Bengal;" but, on the other hand, Mr. Blyth gives it as "common in Lower Bengal during the cold season; but I have never heard before of its staying to breed south of the Himalayas." Both Dr. Hartlaub and Mr. Holdsworth record it from Ceylon, which appears to be the most southern locality from which it has been noted in Asia. In Northern Asia it extends, however, very high. Von Middendorff states that it "breeds on the Boganida. On the 23rd of July the young were large, but still covered with down. On the 12th of August some young birds had not got their wing-feathers. We shot the last on the 27th of August. On the 26th of April the Pintails were on passage on the Stanowoi mountains, and were not seen again." According to Von Schrenck "the Pintail appears rarer on the Amoor than the other ducks. We have an adult bird procured by Mr. Maack at the source of the Amoor, near Nertschinsk, on the 12th of May, a male in full plumage agreeing exactly with the European bird. Mr. Maack found young birds in down of this species on the Southern Amoor, near the mouth of the Ssungari, on the 18th of July;" and Dr. G. Radde speaks of it as "one

of the commonest ducks in the parts I visited. In the eastern Sajan mountains it was rather rare. The first arrived at the Tarei Nor on the 28th of March, 1858, when I observed the first flying from south to north; and the next day large flocks passed down the river. From the 17th of August the Pintails visited the harvested fields at night with Mallards, Shovellers, and Gadwalls. . . . . On the 24th of September, 1855, I saw them on the market at Irkutsk, although the cold at night was six to eight degrees." Dr. Radde remarks that he often found iron shot in the skins of those he procured, and thinks that in China they must shoot them with this shot. He also states that at Kulussutajefsk a Cossack used to catch them with fish-hooks baited with sheep's liver.

Messrs. Dybowski and Parvex state that it occurs in Dauria "during migration;" and Mr. Whitely obtained it near Hakodadi, in Northern Japan, during the autumn. In China it is found during the winter season; and Mr. Swinhoe obtained it at Amoy, and on the island of Formosa. In the Nearctic Region the range of the present species is very extensive, as it is met with from British North America, throughout the United States, into Central America, and down as far south as Costa Rica. On the east coast of America it is, according to Mr. Boardman, rare in New Brunswick; but I did not meet with it in that province. On the western side Messrs. Dall and Bannister record it as "common on the small ponds on the Island of St. Michael's and the adjacent mainland, and extremely common on all parts of Yukon, and on the marshes near the seacoast. In the early spring, arriving about May 1st at Nulato, it is gregarious; but as soon as it commences to breed, about May 20th, or later, they are generally found solitary or in pairs. Their nest is usually in the sedge, lined with dry grass, and, in the absence of both parents, is covered with dry leaves and feathers. They fly more swiftly than any other duck, and are hard to hit on the wing. They lay from six to ten, or even twelve eggs; and as soon as the young are hatched, they withdraw from the river into small creeks and rivulets, where they remain till the ducklings are fully able to fly, when all repair to the great marshes, where, on the roots of the horsetail (*Equisetum*), they grow so fat that they frequently cannot raise themselves from the water. They leave for warmer latitudes about the end of September. This species is excellent for the table. Also obtained at Sitka and Kadiak by Bischoff." Mr. Brown records it from Vancouver's Island; and Dr. Coues obtained it at Fort Yuma. It is likewise met with in the interior of the continent. Captain Blakiston found it at the Forks of the Saskatchewan; and it has been recorded from various localities in the interior of the United States. In the winter season it is met with in the Southern States. Mr. Allen states that on the St. John's river, in Florida, it is not common, but that, according to Mr. Maynard, immense numbers are found on Indian River, passing over in clouds for hours together. I found it quite common in Texas during the winter season. Dr. Sclater records it from Jalapa, in Mexico; Mr. Lawrence from Panama; Messrs. Sclater and Salvin as "seen at Belize in December, and common, during the winter, on the Lake of Dueñas, departing northward in March;" and Dr. A. von Frantzius states that it occurs at Cartago, in Costa Rica. It is likewise met with on the Atlantic islands, according to Dr. Gundlach common in Cuba from October to April; and, according to Albrecht, it is also found in Jamaica.

In its habits the present species differs very little from the Mallard; but it is more often met with on large and open sheets of water, and is a much more shy and wary bird. On the

the water it is a very graceful bird, owing to its slight and neat figure, and it swims very easily and high out of the water, the neck being carried more like that of the Swan. Though a fresh-water duck, it may often be met with during the breeding-season off the coast; and I have met with it breeding on the islands in the Gulf of Bothnia. It feeds on all sorts of water-plants, seeds, tender shoots, and roots, insects and their larvæ, and in general resembles the Mallard in the nature of its food. The note of the Pintail is soft, and not so highly pitched as the quack of most of the fresh-water ducks, nor is it so noisy as many of them, being, on the contrary, rather a silent bird than otherwise. Montagu describes its notes as being "extremely soft and inward; the courting-note is always attended with a jerk of the head; the other greatly resembles that of a very young kitten. In the spring the male indicates his softer passions by suddenly raising the body upright in the water, and bringing his bill close to his breast, uttering at the same time a soft note. This gesticulation is frequently followed by a singular jerk of the hinder part of the body, which in turn is thrown up above the water." It breeds rather later than the Mallard, as a rule; but I have obtained the eggs of the two species in Finland almost equally early. The nest is a mere depression in the soil, often under the shelter of a bush, usually not far from the water, and is lined with small flags or grass-bents; and, within those, down and feathers form a soft bed on which the eggs are deposited. These latter, usually from seven to nine in number, are coloured like those of the Mallard, but are more elongated in shape, and smaller in size. Eggs obtained by me in Finland average 2 inches by $1\frac{1}{2}$ inch; and others, also in my collection, from Jutland, measure $2\frac{9}{40}$ by $1\frac{16}{40}$ inch.

The specimens figured are, on the one Plate a male in full spring plumage, obtained in Leadenhall Market, and one, in the summer dress, from Archangel; and on the second Plate a female from Hakodadi, and young in down from Archangel,—all being in my own collection, and being also the specimens described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Leadenhall Market. *b*, ♂ *ad.* Archangel, July 31st, 1869 (*Meves*). *c*, ♀. Hakodadi, Japan, October 15th, 1865 (*Whitely*). *d*, ♀. Koshkonong Lake, Wisconsin, U. S., April 5th, 1871 (*Dr. Brewer*). *e*, *pullus*. Cholopyain-Ost, June 23rd, 1872 (*Alston and Harvie Brown*).

E Mus. J. H. Gurney, jun.

a, ♂. Leadenhall Market, March 19th, 1867; *b*, ♂. Teesmouth (summer plumage); *c*, ♀. Liverpool Market, January 30th, 1867 (*J. H. G.*).

Genus MARECA.

Anas apud Linnæus, Syst. Nat. i. p. 202 (1766).
Mareca, Stephens in Shaw's Gen. Zool. xii. pt. ii. p. 130 (1824).
Penelops apud Kaup, Natürl. Syst. p. 31 (1829).

This genus, which contains only four species, is represented in the Palæarctic, Ethiopian, Oriental, Australian, Nearctic, and Neotropical Regions, only one species being found in the Western Palæarctic Region. A second species, *Mareca americana* (Gmel.), has been included in the British list; but as foreign Waterfowl are so frequently kept on ornamental water, it appears to me that the specimens obtained were probably escaped birds, and I have therefore not deemed it advisable to include it. This species may be recognized by its greyish head and neck, the former being spotted, and the latter banded with black, the top of the head, however, being nearly white; it has also a broad patch of green around and behind the eye.

The Wigeons frequent both fresh and salt water, but are more marine in their habits than most of their allies, and usually affect the mouths of rivers and streams when they resort to the sea-coasts. In their choice of habitat they resemble the Teal more than any of the other fresh-water Ducks. Their flight is swift and strong; and when on the wing they frequently utter a whistling sound. They feed on aquatic insects, crustaceans, and more especially on various vegetable substances. They do not dive in search of food, but reach down below the surface like the Mallard, and usually feed in shallow water where they can reach to the bottom. They nest on the ground, either close to or at some little distance from water, their nest being a mere depression in the ground well cushioned with down intermixed with moss and grass-straws; and they deposit numerous creamy white eggs.

Mareca penelope, the type of the genus, has the beak considerably shorter than the head, higher than broad at the base, depressed, and slightly narrowed towards the tip; unguis large, ovate, decurved at the tip; gape-line nearly straight, the ends of the lamellæ just visible; nostrils elliptical, placed in the anterior part of the nasal depression; trachea nearly uniform, the lower larynx slightly dilated, and bulged out into a rounded sac on the left side; bronchi moderate; wings rather long, pointed, the first and second quills longest; tail short, tapering; legs short, the tibia bare for a short distance; tarsus anteriorly scutellate; hind toe small, with a narrow lobe, anterior toes moderate; outer interdigital membrane slightly emarginate; claws small, curved, compressed, acute.



J B Kerlemans lith

M&N Hanhart imp

WIGEON.

MARECA PENELOPE



J.G.Keulemans ath

M & N Hanhart imp

WIGEON.

AUTUMN PLUMAGE.

MARECA PENELOPE.

(WIGEON.)

Anas fistularis, Briss. Orn. vi. p. 391, pl. 35. fig. 2 (1760).
Anas penelops, Linn. Syst. Nat. i. p. 202 (1766).
Anas cogolca, S. G. Gmelin, Reise, i. p. 77 (1770).
Anas kogolka, S. G. Gmel. Nov. Com. Petr. xv. p. 468, pl. 21 (1771).
Canard siffleur, Buffon, Hist. Nat. Ois. ix. p. 169, pls. x. xi. (1783).
Anas penelope, Gmel. Syst. Nat. i. p. 527 (1788).
Mareca fistularis, Steph. in Shaw's Gen. Zool. xii. ii. p. 131 (1824, ex Briss.).
Mareca penelope (Linn.), Selby, Brit. Orn. ii. p. 324 (1833).
Mareca kagolka (Gm.), C. L. Brehm, Vogelfang, p. 373 (1855).
Mareca fistulans, C. L. Brehm, op. cit. p. 373 (1855).

Wigeon, *Whistler*, English; *Glas-lacha*, Gaelic; *Canard siffleur*, French; *Assobiadeira*, Portuguese; *Silbon*, *Pato franciscano*, Spanish; *Fischione*, Italian; *Silfiun*, Maltese; *Boukha-saiwa*, Moorish; *Pfeif-Ente*, *Mittelente*, *Blässente*, German; *Sipós Rícze*, Hungarian; *Fluit-Eend*, *Smient*, Dutch; *Pibeand*, *Blisand*, Danish; *Báuðhofdi*, Icelandic; *Pipand*, *Brunnakke*, Norwegian; *Bläsand*, Swedish; *Haapana*, Finnish; *Swestun*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 825; Werner, Atlas, *Palmipèdes*, pl. 42; Kjærb. Orn. Dan. taf. 46; Frisch, Vög. Deutschl. taf. 164; Fritsch, Vög. Eur. taf. 47. fig. 4, and taf. 51. fig. 3; Naumann, Vög. Deutschl. taf. 305; Sundevall, Svensk. Fogl. pl. 58. figs. 4, 5; Gould, B. of Eur. pl. 359; id. B. of G. B. v. pl. 13.

♂ *ad. ptil. hiem.* fronte et pileo rufescenti-ochraceis, capite reliquo et collo ferrugineis, regione oculari et gulâ nigricantibus vix viridi nitentibus, nuchâ eodem colore maculatâ: dorso et scapularibus albis nigro vermiculatis: uropygio saturatè cinereo lavato: remigibus primariis nigricanti-cinereis, secundariis brevioribus nigris viridi nitentibus, intimis elongatis extùs nigris albo marginatis et in pogonio interno saturatè cinereis: caudâ acutâ, saturatè cinereâ: pectore superiore rufescenti-vinaceo, corpore reliquo subtùs albo, subcaudalibus nigris: rostro et pedibus cærulescenti-cinereis, rostro nigro apicato: iridę fuscâ.

♀ *ad.* capite et collo pallidè ochraceis, nigro-fusco striatis et guttatis: corpore suprà saturatè fusco, plumis griseo-albo marginatis: remigibus primariis saturatè fuscis, secundariis nigris vix albo apicatis: tectricibus alarum dorso concoloribus, sed majoribus albo apicatis: uropygii plumis et supracaudalibus fusco-cinereis, albido marginatis: caudâ fusco-cinereâ: pectore superiore albido, sordidè brunneo notato, corpore reliquo subtùs albo, subcaudalibus cinereo notatis.

Adult Male in winter (Farnham, 6th January). Forehead and fore part of the crown warm ochreous, rest

of the head and neck rich rust-red; the region round, and especially behind, the eye, the nape, and the front of the throat, as well as the lower part of the neck marked with black with a slight greenish gloss; back and scapulars white, finely vermiculated with black, the sides of the fore part of the back rusty red; rump blackish grey, very indistinctly vermiculated with grey; upper tail-coverts like the back, but more finely vermiculated, primaries black with a greyish tinge; short secondaries black, richly glossed with green on the outer web, the elongated inner secondaries blackish grey on the inner web and velvety black, margined with white on the outer web; wing-coverts pure white, except those on the edge of the wing, which are slaty grey; upper breast of a peculiar deep pinky vinous tinge, rest of the underparts pure white, except the under tail-coverts, which are rich velvety black; tail dark grey, the central feathers rather longer, and nearly black; beak and legs ashy blue-grey, the former with a black tip; iris brown. Total length about 20 inches, culmen 1·55, wing 10·2, tail 4·8, tarsus 1·55.

Young Male nearly adult (Leadenhall Market, March). Differs from the bird above described in having the back and rump as in the female, the wing-coverts ashy grey, the under tail-coverts dull black and white intermixed, and the colours of the head and neck duller.

Adult Female (Archangel, 24th June). Head and neck greyish ochreous, striped with blackish; upper parts dull dark brown with dull dusty whitish edges to the feathers; primaries dark brown, secondaries dull black, slightly tipped with white; wing-coverts like the back, but the larger ones tipped with white; rump-feathers and upper tail-coverts greyish brown, edged with dull white; tail dull greyish brown; breast dull white, marked with dull reddish brown, rest of the underparts white; the under tail-coverts marked with greyish brown.

Male in late summer dress (Stockholm, October). Head and neck as in the old female; back, scapulars, lesser wing-coverts, and rump dark ashy blackish grey; the fore part of the back with indistinct whitish vermiculations, the rest of the back and scapulars edged with fulvous; wings as in winter dress; but the larger coverts are ashy blue-grey, not white, the median coverts being darker with rather lighter edges; tail as in the winter dress; underparts white, the upper part of the breast and flanks rusty brown; under tail-coverts white with a greyish tinge, and having large blackish brown central blotches.

Generally distributed throughout Europe during the seasons of passage, breeding in the northern districts, and wintering far south, the Wigeon occurs in Asia as far east as Japan, and has been met with on the east coast of America, and on the Prybelov Islands, between the west coast of North America and the continent of Asia.

In Great Britain it is a common winter visitant in suitable localities throughout the United Kingdom, and has been known to remain to breed in some portions of the country. I have observed it in all parts of the south coast which I have at different times visited; and, writing from Somersetshire, Mr. Cecil Smith informs me that it is there "a common, and sometimes very numerous, autumn and winter visitant, arriving in the autumn before the drake has lost its summer dress and assumed the better-known winter plumage; hence specimens are occasionally obtained in most interesting stages of change between the two." On the east coast it is likewise common; and Mr. Stevenson writes to me as follows:—"I have reason to believe that a few pairs remain to nest in Norfolk, from the frequent occurrence, during the last few years, of male birds (being flushed with other fowl, Shovellers, Garganey, &c.) in June and July. The females might pass unnoticed on the wing, or be close sitting at the time. I know of no instance of the

nest or young having been taken; but the above occurrences have taken place in one or two localities in the 'broad-district,' and once in a much more inland locality." Mr. Cordeaux states that it is the commonest Duck in the Humber, where stragglers arrive in September, the main body arriving about November; and he remarks that almost all that are shot there are males, a mature female being an extreme rarity. In Scotland it has been found breeding in several localities; and Mr. Robert Gray writes (B. of W. of Scotl. p. 375) as follows:—"Although I have never taken the nest of the Wigeon in the Outer Hebrides, I have little doubt of, at least, a few pairs nesting there regularly. Some of my correspondents who are resident in these islands meet with Wigeon in pairs at the season when all other waterfowl are breeding. Dr. Dewar, of Glasgow, who spent two months in North Uist in 1858, observed a pair on a lake near the Sound of Harris in the last week of June, and shot the male bird, which I afterwards saw. In the winter season the species is abundant over the whole of the Long Island, crowding many of the shallow lakes of South Uist and Benbecula; and it is likewise a very common bird in almost every district on the western mainland. In other parts of Scotland the Wigeon is known to breed, in Ross-shire and Sutherlandshire."

Mr. J. A. Harvie-Brown states that in Sutherlandshire it is more common north and east of Loch Shin than elsewhere, and is extremely rare, if not altogether absent, in the west; and he further adds as follows:—"Mr. J. Crawford writes that they are frequently observed on some marshy ground between Tongue and Loch Eriboll; and these birds doubtless breed in that neighbourhood." Sir William Jardine and Mr. Selby took the nest in 1834 upon a low island in Loch Laighal. Mr. R. Danford states that it breeds regularly in Ross-shire, and that the nest has been found in Caithness. Colonel Drummond-Hay found it nesting in Orkney; and Dr. Saxby, who says (B. of Shetl. p. 245) that it "visits Shetland regularly in September and October on its way southwards, leaving a few small parties to remain during the winter, but returning in much greater numbers in spring," adds that he has received eggs from Yell, Unst, and Hascocea, and has no doubt that they are found in the more unfrequented parts of the Mainland.

In Ireland it is not known to have bred, being merely a winter visitant, and is for about six months a very common bird on the marine loughs &c. According to Professor Reinhardt, Holböll sent a young male from Greenland to the Copenhagen Museum in 1851; and two others have subsequently been obtained there.

Professor Newton says that, according to Faber, it is found in Iceland, but is not so common as the Pintail, and arrives later. The time of its departure he did not ascertain. It breeds at Myvatn, and probably elsewhere. Mr. H. C. Müller has obtained several on the Færoes; and Captain Feilden says that he believes it not unfrequently breeds there, for he saw a male which was killed in Leinumvatn in the end of May 1872, when in company with a female, and on the 11th June he saw three pairs on a lake near Eide, Osteroe.

In Scandinavia the Wigeon is common during the breeding-season, and some remain there throughout the year. Mr. Robert Collett informs me that it is "one of the commonest Ducks in Norway, where it breeds along the whole coast, from Hvaloer to the Russian frontier; but in the interior it is not so common, and nests almost exclusively in the mountains. In winter numerous flocks are found at the mouths of the fiords."

In Sweden it is common in the extreme north during the summer season, and occasionally a pair or two breed as far south as Småland. In August the main body of those which breed in the north arrive in Central and Southern Sweden; and though the major portion leave the country in November and December to return early in April, yet many spend the entire winter in the south of Sweden. In Finland I observed it almost everywhere; and Dr. Palmén states (Finl. Fogl. ii. p. 397) that it "breeds in all parts of the country, most numerously, however, in the northern and central districts. In Lapland it is numerous to Utsjoki, and is found along the Pasvik river to the coasts of the Arctic Ocean, and in Enontekis to Mukkajärvi and Kilpisjärvi." Middendorff certainly says that it is rare round the Lapland peninsula; but it is common in the interior, though it does not pass down to the mouths of the rivers. Sahlberg and Malmberg found it at Kantalaks. It breeds numerously throughout Österbotten, in Northern Savolaks, and in Hvittis, as well as in the southern parts of Eastern Finland, near Nyslott, in Ladoga Karelen, and Russian Karelen. It breeds more rarely in Kankaanpää, and in South-western Finland, near Björneborg, Yläne, on Kakskerta, and in Nyland."

Sabanäeff says that it is numerous in the northern portions of Russia, but breeds in Central Russia much less frequently than any other species. It is met with in the Government of Tula and Tamboff; and, according to Bogdanoff, it breeds in the black-earth districts on the Volga. Mr. Sabanäeff states that it breeds, though rarely, near Ekaterinburg, and is numerous in the south-eastern portions of that Government and in the Shadrinsk Government, and is more numerous on the lakes of the Ural than in those on the steppes. Throughout Germany it is common during passage, but has only been known to breed there in very exceptional cases. Naumann states that in some seasons it is very numerous, and in others somewhat rare, and never remains there over the winter. In Denmark it is common in winter; and Kjærbölling thinks that now and again a pair may remain to breed there; and all along the coasts of the North Sea it is found during passage and in the winter, the numbers lessening somewhat during severe weather, when many pass further south. Baron von Droste Hülshoff says that on the island of Borkum the first arrived in August, but the main body of them did not appear before about the 20th September. He adds that it has never been known to breed in Holland, which, I think, is probably the case—though Mr. Labouchere informs me that there are rare instances of its having been found nesting in that country. In Belgium and the north of France it is common in spring and autumn, and especially so in the marshes of North Brabant; but I think that the statement made by Degland and Gerbe (Orn. Eur. ii. p. 513) to the effect that it sometimes breeds in France, in the marshes, must be accepted with caution. It occurs in Portugal in winter; and Mr. Howard Saunders speaks of it as being numerous in Spain in the winter and early in the spring. Colonel Irby says (Orn. Str. Gibr. p. 202) of the Wigeon, "they commence to arrive in Southern Spain early in October; but the greater number do not appear until November; and they are then by far the most common of the Anatidæ, in some winters swarming in thousands on the Laguna de la Janda. Their departure for the north begins about the end of March; but a few linger on throughout the whole of April." Lord Lilford mentions to me in a note lately received, that he saw five Wigeon on the Guadalquivir, a short distance above San Lucar de Barameda, as late as the 1st of May, 1875.

Passing eastward, again, I find it recorded from Savoy as occurring in the autumn from the

middle of September, after which it increases in number until the waters freeze, when the majority migrate further south, to repass again in March on their way northwards. In Italy it is a common winter visitant, and literally swarms in Sicily during the cold season. Mr. A. B. Brooke says (Ibis, 1873, p. 343), in Sardinia it is "extremely common in winter; but the greater number left long before any of the other Anatidæ. Several times during the first week in March, when camped out on the top of the mountains, on fine clear nights I heard the wild whistle of several flocks of Wigeon as they flew over me very high in a northerly direction." Lord Lilford met with it in the Ionian Islands, and says that it was abundant in winter, particularly at Livitazza, and it is a common winter visitant to Greece, being met with also at that season in the Cyclades. In Southern Germany it is common during passage in the spring and autumn; and Dr. Anton Fritsch even states that it breeds sparingly in Bohemia, which appears to be a locality very far south if such should prove to be really the case. Messrs. Danford and Harvie-Brown speak of it (Ibis, 1875, p. 427) as being not uncommon in Transylvania in winter and during passage. They saw it at Zah. In Turkey it is extremely common during winter, and equally so on the Russian coasts of the Black Sea; but Mr. Goebel states that it is rare in the Uman district, occurring only during passage. Captain Sperling observed it near Smyrna; and Canon Tristram writes (Ibis, 1868, p. 328) that he found it common everywhere in Palestine.

In North-east Africa it is, according to Captain Shelley (B. of Egypt, p. 288), plentiful in Lower Egypt in the winter, where "I have shot it twice and frequently seen it; and it is generally to be found in the market at Alexandria. Up the Nile it appears to be of rare occurrence; for I have not observed it above Cairo, nor in the Fayoom." Von Heuglin says that it appears in small flocks in Egypt in the autumn, and considerable numbers remain over the winter. In the middle of October and in November he obtained specimens in Nubia, and at the same season of the year on the coasts of the Red Sea down to Sauakin. In April 1857 he observed large flocks between Djizeh and Dachschur. Rüppell states that it occurs in winter in Abyssinia. On the north-west side of the continent it is also a common winter visitant; and Loche states that it breeds in Algeria, which statement appears somewhat doubtful. According to Colonel Irby (*l. c.*), Favier states that it is "the most abundant of all the Ducks near Tangier, being found in large flocks throughout the winter months. They commence to arrive in August and September, and leave during March and April." According to Vernon Harcourt it has also occurred in Madeira.

To the eastward it is found right across the continent of Asia. Mr. Blanford did not meet with it in Persia, and says that it has only been noticed by Eichwald and by Major St. John on the saltwater creeks about Bushire. Mr. A. O. Hume met with it in Sindh, and writes (Stray Feathers, i. p. 261) as follows:—"I saw very few of the Wigeon in Sindh as a whole, and none on the rivers; but on the Muncher lake they were in hundreds, and during the few days we were there very considerable numbers were killed." In India, Dr. Jerdon writes (B. of India, ii. p. 805), it cannot be said to be either common or abundant, although it is met with occasionally in every part of the country in small or moderate flocks. Colonel Irby also states that he met with it in small numbers towards the end of the cold season in Oudh and Kumaon. Dr. Severtzoff records it from Turkestan, where, he says, it occurs during passage; and it is met with throughout Siberia to Kamtschatka. Von Middendorff says that it arrived in the vicinity of Amginsk on the 23rd of April, and he did not observe it east of the Stanowoi Mountains. On the Boganida he found it

nesting. Dr. Radde met with it throughout the country he explored, and breeding on the Northern Angara; the first arrived at the Tarei-nor on the 9th April, and remained there until the end of May. On the 2nd October he met with it on the Central Onon. Von Schrenck also states that he found it common on the Amoor down to its mouth. Mr. Swinhoe states that it is abundant in Southern China and on Formosa in the winter season; and Messrs. Temminck and Schlegel record it from Japan.

In the Nearctic Region the European Wigeon is stated to occur not unfrequently on the Atlantic coast of the United States, and is not rarely exposed for sale in the markets. It has also been met with on the Prybilov Islands, off the west coast of North America; for Dr. Elliott Coues writes (Orn. Pryb. Isl.), "it is an interesting fact that the Wigeon which visits the Prybilov Islands is not *Mareca americana*, which would have been anticipated, but the true *M. penelope*, as Mr. Elliot's specimens attest."

The Wigeon is certainly less marine in its habits than most of the species which frequent our coasts during winter; for, although it frequents the coast, yet it is generally met with only in quiet bays and inlets, especially where the receding tide leaves large mud banks bare of water, and where rivers or streams broaden before discharging their contents into the sea. It also frequents freshwater lakes and streams, but chiefly during the night, and seldom remains there any length of time. It has much affinity with the Teal in its choice of habitat; and, like that species, when, during the daytime, it wishes for quiet, it resorts to the muddy shores or flats which are covered with low flags or rushes, or else places where the ground is overflowed and somewhat covered by the water. On the wing the Wigeon is swift; and when migrating they fly sometimes at a considerable altitude and sometimes quite low, and frequently in large dense flocks. They are, as a rule, shy birds; and when in flocks they are very difficult of approach, taking flight long before one can get within gunshot range. Its note is a peculiar whistling sound, uttered both whilst the bird is on the wing and when sitting on the water, though more frequently when flying; and from this note its local name of Whistler, as well as its appellation in French, German, &c., is derived. When a large flock passes at some distance the sound produced by the whistling note from so many throats is not unpleasant; but when the birds are in tolerably close proximity, their call-note appears harsher and is by no means musical. It feeds on aquatic insects and small crustaceans, worms and small fish-fry, but especially on vegetable substances of various kinds, such as buds, tender roots and shoots, as well as the seeds of various marsh- and water-plants, and also, though less frequently, on grain. When feeding it never appears to dive, but stretches down with its neck without submerging the entire body; hence it frequents shallow places, and not deep waters. Mr. Robert Collett informs me that in the stomach of a specimen killed at Christiania in September he found gravel and seeds of *Ranunculus flammula*, and in the stomachs of several others killed in the autumn season he found only vegetable substances.

The eggs are deposited late in May or early in June, the locality selected for the purpose of nidification being sometimes close to the water's edge, and at others at some distance from it; for Mr. Collett informs me that he found a nest on the fells, not far from the town of Lillehammer, which was under a juniper bush at least 800 yards from the water. The nest is a mere depression or hole scratched in the ground and well lined with down and a few feathers, intermixed with

a little moss or a few grass bents. A nest which I possess consists of a little moss matted together with down, the latter being of a dark sooty brown colour, the centre of the down being rather lighter, or dark sooty grey; and a few feathers of the bird are interspersed here and there. The eggs are creamy white in colour and oval in shape, tapering slightly towards the smaller end. Those in my collection average about $2\frac{11}{40}$ by $1\frac{23}{40}$ inch in size.

The specimens figured are:—on one Plate an adult male, in full winter dress, and an adult female; and on the other Plate an adult male in the dull plumage that is assumed in the late summer, and a second male changing from this dress into the full winter plumage.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂. Leadenhall Market, February 1869. *b*, ♂ *jun.* Leadenhall Market, March 1870. *c*, ♂ *in change.* Stockholm, July 1871. *d*, ♂. Stockholm, October 1871 (*Meves*). *e*, ♂ *in change.* Near Archangel, September 9th, 1872 (*Piottuch*). *f*, ♀ *ad.* Archangel, June 24th, 1874 (*Piottuch*). *g*. Takoo, China, December 1865 (*R. Swinhoe*).

Genus FULIGULA.

Anas apud Linnæus, Syst. Nat. i. p. 203 (1766).
Nyroca apud Fleming, Phil. of Zool. ii. p. 260 (1822).
Aythya apud Boie, Isis, 1822, p. 564.
Branta apud Boie, ut suprà.
Fuligula, Stephens in Shaw's Gen. Zool. xii. p. 187 (1824).
Platypus apud C. L. Brehm, Lehrb. Naturg. eur. Vög. ii. p. 828 (1824).
Netta apud Kaup, Natürl. Syst. p. 102 (1829).
Callichen apud C. L. Brehm, Vög. Deutschl. p. 922 (1831).
Fulix apud Sundevall, K. Vet. Ak. Handl. 1835, p. 129.
Mergoides apud Eyton, Cat. Brit. B. p. 57 (1836).
Marila apud Bonaparte, Compt. Rend. xlii. pt. ii. p. 651 (1856).

The Ducks belonging to this and the following genera are more especially marine in their habits, and are all good divers, differing in this respect from the preceding genera. The genus *Fuligula* is represented in the Palæarctic, Ethiopian, Oriental, Australian, and Nearctic Regions, four species being found in the Western Palæarctic Region.

They frequent fresh water during the nesting-season, breeding, as a rule, in the northern portions of the Palæarctic and Nearctic Regions; but at other seasons of the year they frequent the sea-coasts, and are not, as a rule, met with on inland water. They are very good divers, often remaining some time under water, and generally obtain their food by diving; but they are clumsy walkers and seldom stray far from the water. They fly fast, usually at no great altitude; and when they alight they do so very suddenly. They feed on small marine shell-fish, on insects, fish, &c.; and when frequenting fresh water they will also feed on vegetable matter. They nest on the ground, making a nest of down in a depression in the soil, and deposit numerous pale-buff or greenish-buff eggs.

Fuligula cristata, the type of the genus, has the bill nearly as long as the head, about as wide as high at the base, depressed, and broadening towards the tip, where it is broad and rounded; unguis small, oval, flattened, and decurved; nostrils small, oval, placed in the lower anterior part of the nasal sinus; gape-line slightly curved; the upper mandible overlapping the lower one, the ends of the lamellæ nearly concealed; trachea with the inferior portion of the tube contracted; inferior larynx with one lateral bulb, partly membranous, partly osseous, the other side compressed; wings short, pointed, the first and second quills longest; tail small, rounded; legs short, placed far aft; tarsus compressed, anteriorly scutellate; hind toe slender but broadly lobed, anterior toes double the length of the tarsus; interdigital membranes emarginate; claws moderate, slightly curved, moderately acute.



J.G.Keulemans lith.

Hanhart imp.

POCHARD.
FULIGULA FERINA

FULIGULA FERINA.

(POCHARD.)

Anas penelope, Briss. Orn. vi. p. 384, pl. xxxv. fig. 1 (1760).
Anas ferina, Linn. Syst. Nat. i. p. 203 (1766).
Anas ruficollis, Scop. Ann. i. Hist. Nat. p. 66 (1769, nec Pall.).
Anas lurida, S. G. Gmel. Reise durch Russl. i. p. 70 (1770).
Anas eritrocephala, S. G. Gmel. tom. cit. p. 71 (1770).
Le Millouin, Buff. Hist. Nat. Ois. ix. p. 216 (1783).
Anas rufa, Gmel. Syst. Nat. i. p. 515 (1788).
Nyroca ferina (L.), Fleming, Phil. of Zool. ii. p. 260 (1822).
Aythya ferina (L.), Boie, Isis, 1822, p. 564.
Fuligula ferina (L.), Steph. in Shaw's Gen. Zool. xii. pt. ii. p. 193 (1824).
Platypus ferinus (L.), C. L. Brehm, Lehrb. Naturg. Eur. Vög. ii. p. 828 (1824).
Aythya erythrocephala (Gmel.), C. L. Brehm, Vög. Deutschl. p. 919 (1831).
Anas marila, Malh. Faun. Orn. Sicil. p. 221 (1843, nec Linn.).
?*Fuligula homeyeri*, Baedecker, Naumannia, 1852, Heft i. p. 12, pl. 1.
Aythya homeyeri (Baed.), C. L. Brehm, Vogelfang, p. 380 (1855).
Fulix ferina (L.), Salvadori, Fauna d'Italia, Uccelli, p. 265 (1872).

Pochard, *Dunbird*, English; *Lacha-mhasach*, Gaelic; *le Milouin*, French; *Tarrantana*, Portuguese; *Cabezon*, Spanish; *Moriglione*, Italian; *Tafelente*, *Tafelmoorente*, German; *Tafeleend*, Dutch; *Taffeland*, Danish and Norwegian; *Rödhalsad Dykand*, Swedish; *Punasotka*, Finnish; *Rijegolowka*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 803; Werner, Atlas, *Palmipèdes*, pl. 55; Kjærb. Orn. Dan. taf. 48, and Suppl. pl. 27; Fritsch, Vög. Eur. taf. 48. fig. 3, taf. 49. fig. 9; Naumann, Vög. Deutschl. taf. 308; Sundevall, Svensk. Fogl. pl. 84. figs. 3, 4; Gould, B. of Eur. pl. 367; id. B. of G. Brit. v. pl. 20; Schlegel, Vog. Nederl. pl. 314; Roux, Orn. Prov. pls. 371, 372.

♂ *ad.* capite et collo lætè rufescentibus: collo imo, dorso antico et pectore supremo nigris: corpore suprà et tectricibus alarum cum scapularibus albis tenuissimè nigro undulatis: uropygio, supracaudalibus, crisso et subcaudalibus nigris: remigibus primariis cinereo-fuscis fusco terminatis, secundariis pallidè cinereis obsoletè nigricanti vermiculatis: corpore subtùs albido, obsoletè nigricanti undulato: rostro nigro et pallidè plumbeo: iride aurantiacâ: pedibus plumbeis.

♀ *ad.* capite et collo ferrugineo-fuscis, mento et areâ ad basin rostri albidis: pectore rufescenti-fusco, vix albido notato: abdomine albido, crisso et subcaudalibus fuscis: rostro sordidè plumbeo: pedibus sordidè et saturatè plumbescentibus.

Adult Male in winter (London market, 26th December). Entire head and upper neck rich red, almost copper-red; lower neck, fore part of the back, and upper breast black; back, wing-coverts, scapulars, and short secondaries white, clearly and distinctly vermiculated with black; the lower back tinged with greyish, and gradually becoming deep black on the rump and upper tail-coverts; tail blackish brown with a grey tinge; primary quills light brown, broadly tipped with blackish brown; underparts white, finely and somewhat indistinctly vermiculated with blackish grey, the lower abdomen washed with grey, and gradually merging into black on the under tail-coverts; bill black, with a broad band of dull light blue; legs dark lead-blue; iris bright yellow, brownish yellow in younger birds. Total length about 18 inches, culmen 2·2, wing 8·4, tail 2·8, tarsus 1·45.

Adult Female (near London, 17th February). Head and neck dull reddish brown, but dirty white at the base of the bill and on the chin and upper throat, and marked with dull white on the sides of the head; back dark brown, the feathers at the tips here and there greyish white, vermiculated with blackish; rump and upper tail-coverts black, indistinctly vermiculated with greyish; primaries as in the male; secondaries dark ashy grey; breast dark reddish brown, the feathers here and there narrowly edged with white; abdomen white, marked here and there with brown, becoming brownish grey on the lower abdomen and under tail-coverts; bill duller than in the male; legs dull dark lead-grey. In size usually less than the male.

Male in summer. Resembles the old female, but has the head and neck more reddish brown in tinge, the rump and upper tail-coverts darker, and the feathers on the back with larger light tips and more clearly vermiculated.

Young in down (*fide* Naumann). Head and neck dull rusty brown; upper parts dull blackish brown; underparts dirty yellowish white; bill and feet light bluish; iris grey.

The Pochard, or Dunbird, is found generally throughout Europe, ranging southward into North Africa, and eastward as far as China.

In Great Britain it is by no means rare; it breeds in several localities in England, and in many parts of Great Britain is quite a common bird in the winter season, when large numbers are often to be seen in the markets. Mr. Mansel-Pleydell says that it is one of the commonest Ducks found in Dorsetshire. Dr. Pulteney says that they are frequent in Poole, and in hard winters are seen up the country on the fresh waters. As below stated, it breeds in Dorsetshire, Norfolk, and Yorkshire; but Mr. Cordeaux says (B. of Humber Distr. p. 171), it is "by no means common on the Humber. In severe winters I have met with specimens in our freshwater ponds and drains; but we always consider it a rare Duck, and it is seldom killed by any of our numerous gunners. The specimens I have obtained during the last ten years are either females or young birds of the year, the mature male being quite exceptional. This species is occasionally met with in the autumn and winter on Croxby Lake and other inland waters in North Lincolnshire." Mr. Hancock states (B. of Northumb. & Durh. p. 156), "it is a not uncommon winter visitant, though I have reason for believing that it occasionally breeds in the district. I have seen a specimen on Copheaton Lake in the middle of the breeding-season, and from its movements was led to believe that it had a nest there. I have likewise seen Pochards more than once on Gosforth Lake in March and April. I am indebted to the late Mr. Bean, of Scarborough, for an egg of this species. It was one of a nest taken at the Mere, at Scarborough, June 1844, by that gentleman, who shot the bird from the nest."

I am indebted to Professor A. Newton for the following excellent notes on the breeding of the Pochard in Great Britain, viz. :—"Many years ago, as recorded by Lubbock, the Pochard seems to have bred occasionally, if not regularly, at Scoulton, in Norfolk; but it had certainly ceased from doing so by 1850, or perhaps earlier, and I have not heard of a nest there since. In the summer of that year my brother and I saw a cock Pochard on two occasions on a mere at Wretham in the same county: and I have not much doubt that the mate of this bird was then sitting on her eggs close by; for Mr. Lawrence Birch has informed me that he knew of this species breeding about that time in the neighbourhood. On the 19th of April 1873, Lord Walsingham took me to a mere on his property, which is not very far from Scoulton; and we saw some six or seven cock Pochards on the water, but only one hen, or Dunbird, whence we concluded that the other hens were on their nests. The keeper told me that he had found a nest in 1871, and another in 1872 almost on the same spot; but going to it, all we saw was a dead Dunbird. Early in June 1875 I understand that Mr. Stevenson saw several pairs of this species with their broods on this same mere. On the 29th of May 1876 I was there again, in company with Lord Walsingham and Mr. H. M. Upcher, and I was shown a Dunbird's nest containing several eggs (one of which I now have) that seemed to be deserted; but in this we were mistaken, as I afterwards learnt that this bird brought off four young from it. Close by we saw an old Dunbird with her brood, that looked as if they were some days old, and soon after came upon what seemed to be another family party—though it is possible that they were the same birds, that had shifted their position. Later in the day on a smaller mere we found two more broods (one of five and the other of seven, I think), both of which with their respective mothers we saw at once. The next day, at a third mere in the same neighbourhood, I was shown a Dunbird's nest, within three yards of which we walked before she left it. I also saw a nest from which the young had been hatched, and still containing an addled egg, as well as a brood swimming on the mere, very likely from this same nest. There was another brood on a small pool close by, which Lord Walsingham visited, but I did not. Of the nests seen by me, one was built on sedge growing in the water; but the others were on the land, though so close to the margin that the bird could slip into the water in less time than it takes to say so. I afterwards heard that there must have been at least six Dunbirds' nests on the first of these meres that summer, and three on the last, making, with the two on the small mere, no less than eleven on this property. In 1877 I believe there were not quite so many.

"In 1875 I was informed by Mr. Luckham, of Steedland, in Dorsetshire, that a pair of Pochards had bred on a piece of water in that neighbourhood that summer, and perhaps also two or three years before. In the summer of 1876 Mr. Edward Newton with Mr. Mansel-Pleydell went twice to this place, and each time saw some birds of this species. On the 29th of June in that year I accompanied those gentlemen on a third visit, and we saw a Dunbird with one duckling, a second with two, and a third which was alone, but no cock Pochard. The keeper said that one brood had originally consisted of five, but that the young suffered from the predatory fishes. None of the nests had been found that year. In 1877 Mr. Luckham reported that two or three pairs were breeding on the same water; and I have heard of another place in Dorsetshire where this species is said to have bred. These particulars my brother and I took some pains to get; and I believe them to be correct. The opinion has been expressed (Zool. 1877, p. 385) that this colony owes its origin to a wounded (or 'pricked') Pochard, unable to

perform the wonted northern migration of his kind, having induced a mate to stay in his company; but, from all I can gather, this had its rise in a mere supposition. A similar opinion has been entertained with regard to the Norfolk colony: but that I believe to be equally groundless; for the breeding of this species in that county is known to have occurred for some fifty years or more. In both these localities it has lately been the practice of the owners to leave this fowl unmolested after the first week of February; and what has happened seems to be but the natural consequence of this wise forbearance. If I am right in thinking thus, it is a strong argument in favour of the principle of the Wild-Fowl-Preservation Act.

"The readers of Mr. Hewitson's ornithological work will know that the Pochard has long bred in some numbers on a mere in the East Riding of Yorkshire. First and last I have had a good many eggs from this locality, and among them a set of fourteen taken there by a correspondent of mine in 1873. I never heard of so many in any other nest of this species, and am inclined to suppose that two birds must have laid together. I am told that the nests seldom contain more than six or eight, but that others are not unfrequently found scattered about. Mr. More mentions the Pochard as breeding in Craven. Beside these breeding-localities (West Norfolk, East Dorset, and the East Riding of Yorkshire), the only other in the British Isles of which I ever heard is in the county of Sligo. Colonel Whyte wrote in the 'Field' of June 2nd, 1877, that a pair of Pochards was then nesting in his grounds, this being the first time that he had known of such an occurrence.

"I may perhaps add that my brother and I never succeeded in inducing this species to breed in confinement, though we had a pair for some years at Elveden, which were almost the tamest birds in our duckery. The courtship of the cock in spring was most entertaining. He would extend himself at full length on the water and utter the softest of sounds; but his mate was indifferent to his advances. Perhaps she was too prudent, and thought that the pond on which she lived would not supply sufficient or suitable food for any possible offspring. This might have been the case; but at any rate her ducklings would have run no risk of being swallowed by ravenous fishes, which, as it appears to me, are the chief obstacle to the multiplication of the Pochard on our waters."

Mr. Robert Gray states (B. of W. of Scotl. p. 384):—"Over the whole of the west of Scotland the Dunbird is a very familiar species. In some districts it appears in very large flocks, and offers a temptation to sportsmen to try a raking shot. On Loch Lomond many hundreds congregate together and feed in shallow water over the borders of some of the low-lying islands, such as Inchmain, where half a dozen or more could easily be obtained by firing into their midst.

"On many of the Inner Hebrides this species is also common, being found in the freshwater lochs of Islay and Mull, where they are frequently shot. Unusual numbers were sent from the west-coast shootings in the winter of 1866–67. I have not been able satisfactorily to make out the proportion of Pochards among the vast flights of Wild Duck that frequent the lakes of the outer islands, as I have not been there in the winter season. Limited numbers at least fly in company with Wigeon and Tufted Ducks; and those who practise shooting on these lochs for the table readily distinguish it from the next species.

"On the eastern shores of Scotland, where freshwater lochs are of less frequent occurrence than on the west, I have seen great numbers of this bird frequenting estuaries after nightfall.

In Fifeshire and East Lothian it may be called abundant." In Shetland, according to Dr. Saxby, it is "a winter visitant, coming in small flocks, but its appearance is very uncertain. A few also return in spring, but apparently only for the purpose of resting upon their way; for they often arrive in the evening and leave early next morning; and this happens in the roughest as well as the finest weather. They are extremely shy, and for this reason seldom alight upon the lochs in the daytime, preferring the wide sheltered bays, and keeping far out of shot from the shore.

"One October day I saw the first-arrived flock of Pochards, seven in number, flying up and down the voe, and at last marked them down in a small sandy bay near Hunie, where I watched them for a long time showing off their strange habit of fluttering along the surface of the water, and splashing it about with their wings. When in flight they may at once be recognized, even at a long distance, by their light-coloured bodies and dark heads and wings."

In Ireland, Thompson says, the Pochard is a regular winter visitant, varying, however, much in numbers in different years; and, as above stated by Professor Newton, it has on one occasion been known to breed in the county of Sligo.

It has not occurred in Greenland; and is very rare in Iceland. Professor Newton writes:—"Mohr, as rightly quoted by Herr Preyer, says that he once saw this bird in the Eyjarfjorðr river. For eighty years no one else seems to have noticed it in Iceland; but on the 20th June, 1860, Herr Ernest Gehin shot one on the Thingvalla lake, which Herr Preyer saw the next day. According to Professor Reinhardt it has on one occasion (in 1863) been met with on the Færoes; and it occurs in Scandinavia, though not found commonly in any portion of that country. Mr. Collett says that it is occasionally met with in Southern Norway. Two were shot on the Kröderen lake, in Krydsherred, in 1829, one at Frederikshald in 1858, and one on the fiord off Christiania in 1859. In 1867 it was first shot at Bergen; and Mr. Friele obtained two in 1868, and several times observed it in 1869 and 1870. In the winter of 1870–71 it was seen at Stavanger, and a male was sent from there to the University Museum. It is possible, he adds, that it is not rare in the south of Norway. Professor Nilsson says that it is one of the rarer of the Diving Ducks in Sweden, where it is found chiefly in the eastern and southern districts. Von Wright states that it sometimes occurs at Karesuando. Malmlén records it as rare in the late autumn near Gothenburg. In Skåne it has been obtained in September at Nöbbelöf, at Rydsgård in December, and at Årup in January. Professor Liljeborg obtained it on Gottland; and it is said to have occurred at Norrköping and on the coast off Stockholm. Dr. Palmén writes (Finl. Fogl. ii. p. 521) that in Finland it only occurs in the southern districts, and is one of the rarest of the Ducks. During the thirty years which were spent by Magnus von Wright in the Helsingfors district he only obtained three examples, all shot in the spring; Ekebom obtained a young bird in the autumn of 1865; and the same year Captain Westzynthius sent to the museum one he had shot near Björneborg. Grönfeldt surmises that it breeds at the mouth of the Kumo river, as it has been shot there on several occasions. Bergstrand includes it in his list of Åland birds; but it does not appear whether he ever obtained it there. In Russia it ranges tolerably far north. Professor Malmgren says that he found it breeding numerously on Lake Ladoga; and Meves, who met with it there near Dubno, found a nest on a small swampy island. Mr. Sabanäeff informs me that it breeds in the Jaroslaf Government, but only in the Daniloff district. In the Moscow Government it is rare, but further south very numerous. In the Ural

he found it extremely common in the lake districts; but it only rarely breeds there, a few nesting north of Ekaterinburg. Mr. Taczanowski states that it is common in Poland on passage, and a few breed on the lakes and small marshes throughout the country. Borggreve says that it occurs regularly on passage all through North Germany, and is not rare, but it only breeds sparingly on some of the lakes in Pomerania and Mecklenburg. He found a pair breeding on the Oderbruch and in Mecklenburg. Von Preen states that it is common on the Lake of Schwerin; Boeck obtained it near Danzig in the summer; and, according to Gloger, it breeds, though not commonly, in Silesia. Von Homeyer writes (J. f. O. 1872, p. 339) that it breeds frequently in Lausitz; Baldamus confirms a statement by Borggreve that it still breeds on the shores of the Mansfeld lakes; and Mr. Schalow writes (J. f. O. 1876, p. 10) that Herr von Meyerink informed him that it breeds frequently on the Wublitz, near Uetz, and on the Fahrland lake. Mr. J. Collin says that it is frequently found in great numbers on the Danish coasts, where it arrives in October and November, and leaves in March and April. It has also been found breeding in the Ringkjöbing Fiord, in Thy, on the Sperring Sö, and in Holstein.

In winter it occurs in small numbers on the Dutch coast; and Baron Fallon states that it is also met with on the coasts of Belgium in Polders and the marshes of the Campine, as also, though not common, on the Meuse. In France, MM. Degland and Gerbe write, it arrives late in October in larger or smaller flocks, but disappears when the frost sets in, and returns late in April on its passage northwards. It is, they add, very common on the marshes near Lille, Douai, Béthune, and Cambrai in both seasons of passage.

In Portugal the Pochard is said to be common in winter; and in Spain, Mr. Howard Saunders says, it is tolerably abundant, and used formerly to nest at the Albufera, though it is doubtful if it yet breeds in Andalucia. Colonel Irby writes (Orn. Str. Gibr. p. 203) that he has but "rarely seen this Duck near Gibraltar, and then only in winter; but it is more abundant in the marismas below Seville; and at times a good many are to be seen at the Laguna de la Janda. The Andalucian lagoons, however, being mostly very shallow and void of weeds, are not suited to the habits of this diving Duck." According to Salvadori the present species is common, and generally distributed in suitable localities, in Italy throughout the winter; and Malherbe, who records it (*l. c.*) from Sicily under the name of *Anas marila*!, says that it is found in large flocks in the marshes and on the Lake of Lentini. In Sardinia it is stated both by Salvadori and Mr. A. B. Brooke to be "abundant in winter;" and Mr. C. A. Wright, referring to its occurrence in Malta, writes (Ibis, 1864, p. 156) as follows:—"The first Maltese specimens I saw of this species were a male and female, which I shot at Fort-Manoel Island, in November 1858. Mr. W. C. P. Medlycott afterwards shot one in Sliema creek, in December 1859. Since then I have almost yearly observed a few individuals in the market."

In Southern Germany this Duck is found here and there during the breeding-season, but nowhere common. Dr. Anton Fritsch writes (J. f. O. 1872, p. 371) that only a few pairs breed on the larger ponds near Frauenberg and Wittingau, in Bohemia, but that it used formerly to breed also in the vicinity of Pardubitz. Most of these Ducks migrate southwards, he adds, in in October and November. The late Mr. Seidensacher informed me that he had seen and obtained stragglers in October and December near Cilli, in Styria; and Messrs. Danford and Harvie-Brown state (Ibis, 1875, p. 429) that it is "rather common on the lakes of the Mezöség,

in Transylvania, where Bieltz says that they sometimes breed. We saw a few at Záh." It is said to breed in Hungary; and I observed it on the Lower Danube. In Turkey it is said by Messrs. Elwes and Buckley to be common, but not so numerous as the freshwater Ducks. Dr. Krüper states that it is tolerably common in Greece; and, according to Lord Lilford, it is very common in winter in the Ionian Islands.

In Southern Russia the Pochard is said to be common; and it winters in some numbers in Asia Minor. In Palestine also, Canon Tristram states, it is one of the commonest species found in winter on the Jordan.

In North Africa it occurs numerously in winter. Von Heuglin says that he saw it in small flocks on the Delta, the Chanka Lake, and on the shores of the Red Sea, near Suez; but Mr. J. H. Gurney, jun., states (Rambl. of a Natur. p. 228):—"Of all the myriads of Ducks at Lake Menzaleh, Pochards seem the commonest; I saw acres and acres of them. In one place an immense flock, which I believe were chiefly Pochards, extended three miles as they sat upon the water, without any visible break." It is said to be very numerous in Algeria, and certainly breeds there. Mr. Salvin says of it (Ibis, 1859, p. 363):—"Very abundant during the winter months in the lagoon of El Baheira. At Zana it was far from uncommon; but we were not fortunate in obtaining their eggs with certainty." M. Favier says (*fide* Col. Irby, *l. c.*) that it "arrives during October, to remain in Morocco for the winter, departing for the north in April and May;" and Colonel Irby adds that he found it common about the lakes near Tetuan, and shot one there as late as the 30th of March.

To the eastward the Pochard is found as far as China. Mr. Blanford (E. Persia, ii. p. 302) states that he shot it at Basrah, on the Persian Gulf; and Dr. Jerdon writes (B. of India, ii. p. 812) that it "appears to be more abundant in Western India than in Bengal, but occurs throughout the whole country in small parties, generally on the larger and more open tanks." It appears to be rare in Siberia. Neither Von Middendorff nor Von Schrenck appear to have met with the present species; and Dr. G. Radde writes that he only knows of it as found in the Baikal district; and it breeds, he adds, in the delta of the Upper Angara, where he shot a young unfledged female on the 31st July, 1855. It was also seen by him, exposed for sale, in the market at Irkutsk, on the 2nd October 1855.

Père David says that, though rare in Eastern Siberia, it is very common in China, both on passage and in winter; and Mr. Swinhoe met with it in Shanghai in the winter.

In America the present species is replaced by a very closely allied, if really distinct species, *Fuligula americana*, which differs merely in having the upper parts in the male darker, vermiculated on a greyish instead of a white ground; but I can discover no difference in the females. I have examined several specimens of *Fuligula americana* in the collection of Messrs. Salvin and Godman, and compared them with my own specimens of *Fuligula ferina*; and all that can be said is that they are just (and only just) distinguishable; and it appears to me very probable that, in a large series of specimens from both continents, the two forms would be found to run into each other.

In habits the Pochard differs but little from its near allies amongst the Anatidæ. It frequents both the sea-coast and inland waters, and obtains its food chiefly under the surface of the water. It is consequently an expert diver, and able to remain below some time, and to

swallow its food when under water. It swims with ease, sitting low in the water, the neck being drawn in, and the feathers on the head frequently puffed out, making it look as if the head were very large. On the wing it is not very swift; but it flies with tolerable ease, propelling itself by quick flaps of the wings, making a very perceptible rushing noise. In general habits it is not shy, but is at the same time well able to take care of itself, and when disturbed will usually seek safety by swimming quickly away in preference to taking wing. On the shore it is able to walk tolerably well, although its legs are placed so far back; it usually holds its body very erect, but avoids going any distance on foot.

It is, as a rule, rather a silent bird than otherwise; and its call-note, which is uttered by the male when swimming or on the wing, is a rather low *rerrr-rerrr-a*, the call of the female being somewhat similar but harsher.

The food of this Duck consists almost exclusively of vegetable substances, which it obtains from the bottom by diving; but it is said occasionally to devour aquatic insects, and, when impelled by hunger, small fishes. Naumann says that it is extremely partial to the roots of *Polygonum amphibium* and the lentil-like seeds of *Potamogeton marinus* and *Potamogeton pectinatus*.

The Pochard makes its nest near water, it being merely a hollow in the ground lined with dried vegetable matter and the down of the bird itself; and the eggs (usually, it would appear, seven or eight in number) are uniform greenish grey, some with a tinge of buff, those in my collection varying in size from $2\frac{1}{40}^{2}$ by $1\frac{2}{40}^{3}$ to $2\frac{1}{40}^{9}$ by $1\frac{2}{40}^{9}$ inch in size.

The specimens figured are the adult male and female in winter plumage above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂. Leadenhall Market, December 26th, 1870. *b*, ♀. Near London, February 17th (*Davy*). *c*, *d*, ♂. Seeland, Denmark, February 5th, 1870 (*Benzon*). *e*, ♂ *ad.* China.

E Mus. C. A. Wright.

a, ♀. Malta, winter (*C. A. W.*).



REDCRESTED POCHARD

FULIGULA RUFINA

FULIGULA RUFINA.

(RED-CRESTED POCHARD.)

Anas fistularis cristata, Briss. Orn. i. p. 398 (1760).
Anas rufina, Pall. It. ii. App. p. 713. no. 28 (1773).
Branta rufina, Boie, Isis, 1822, p. 564.
Fuligula rufina, Steph. Shaw's Gen. Zool. xii. p. 188 (1824).
Netta rufina, Kaup, Nat. Syst. p. 102 (1829).
Callichen ruficeps, C. L. Brehm, Handb. Vög. Deutschl. p. 922 (1831).
Platypus rufinus, C. L. Brehm, tom. cit. p. 922 (1831).
Callichen micropus, C. L. Brehm, tom. cit. p. 925 (1831).
Callichen subrufinus, C. L. Brehm, tom. cit. p. 924 (1831).
Callichen rufinus, C. L. Brehm, tom. cit. p. 924 (1831).
Mergoides rufina, Eyt. Rar. Brit. B. p. 57 (1836).
Aythya rufina, Macgill. Man. Brit. Birds, p. 191 (1846).
Callichen rufescens, C. L. Brehm, Vogelfang, p. 379 (1855).

Canard siffleur huppé, French; *Sivert*, Spanish; *Fistione turco*, Italian; *Anitra turca*, Sicilian; *Kolbenente*, German; *Kaczka helmiasta*, Polish; *Nyrok krasnonosyi*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. pl. 928; Werner, Atlas, *Palmipèdes*, pl. 53; Kjærb. Orn. Dan. taf. xlix.; Fritsch, Vög. Eur. pl. 52. figs. 3 & 7; Gould, B. of Eur. pl. 369; Naumann, Vög. Deutschl. taf. 307; Schlegel, Vog. Nederl. pl. 316; Bechstein, Orn. Taschenb. pl. 38; Gray, Gen. of B. ii. pl. 168. fig. 2.

♂ *ad.* pileo et nuchâ rufescentibus, pilei plumis elongatis: dorso antico et nuchâ imâ nigris, dorso postico cum scapularibus grisescenti-brunneis, dorso laterali maculâ magnâ albâ induto: uropygio nigricanti-brunneo: supracaudalibus nigris: caudâ saturatè cinereâ: remigibus albicantibus, primariis in pogonio externo (et in pogonio interno versùs apicem) saturatè fusco-cinereo marginatis et eodem colore conspicuè terminatis, secundariis ante apicem fusco-cinereo transfasciatis, secundariis intimis elongatis fusco-cinereis: tectricibus alarum dorso concoloribus: facie laterali, gulâ et gutture ferrugineis rosaceo lavatis: collo imo, pectore et corpore subtùs nigris: uropygio laterali et hypochondriis albis: rostro miniato, ungulo albido: iride rufescente: pedibus rubescenti-aurantiacis.

♀ *ad.* mari dissimilis, suprà saturatè rufescenti-brunnea: pileo et uropygio saturatioribus: dorsi plumis vix pallidè brunneo marginatis: remigibus pallidè brunneis, extùs saturatè brunneo marginatis, eodem colore versùs apicem lavatis et grisescente brunneo apicatis: secundariis grisescenti albidis, versùs apicem brunneo transfasciatis, secundariis intimis brunnescentibus: gulâ et gutture superiore albidis: subtùs brunnescenti-alba: iride brunneâ: rostro nigricante, versùs apicem saturatè rosaceo, mandibulâ ad basin flavicanti-rosaceâ: pedibus pallidè et obscurè rubris, membranâ natatoriâ nigricante.

Adult Male (India). Crown and nape light brownish red, the feathers full and elongated, forming a conspicuous crest; sides of the head, from the eye, throat, and upper part of the neck rusty red, washed with rosy red, giving a peculiar and beautiful colour; lower part of the neck, breast, centre of the abdomen, and fore part of the back black, this colour running upwards towards the nape in a narrow line; dorsal region, lower part of the back and scapulars greyish brown; on each side of the dorsal region a large pure white patch; rump blackish brown; upper tail-coverts black; tail dark ashy grey, primaries dirty white, margined along the outer web, and on the inner web towards the tip, with dark ashy grey, and broadly tipped with that colour; secondaries white, with a broad bar of dark grey across the tip; inner secondaries elongated, dark ashy grey in colour; upper wing-coverts ashy brown, underparts black, the sides of the abdomen pure white; bill bright vermilion-red, the tip white; irides reddish brown; legs orange-red. Total length 21 inches, culmen 2·3, wing 10·8, tail 3·5, tarsus 1·6.

Young Male (India). Resembles the female, but has the crest much fuller and more rufous in colour, in tinge much closer to that of the male, only duller.

Adult Female (Inkerman, March 20th). Crown, nape, back of the neck and upper parts generally dark reddish brown, or dark hair-brown, with a rufous tinge, darkest on the rump and crown, the feathers on the back and scapulars being rather lighter towards the tips; quills dull brown, darker towards the tip, and margined along the outer web with dark brown, the apical portion being, however, dull greyish brown; secondaries greyish white, barred with brown towards the tip, inner secondaries brownish; tail brownish grey, margined and tipped with dull white; throat and upper part of the neck white; underparts generally dirty brownish white; eyes hazel; beak blackish, with a pink tip, a portion of the lower mandible being yellowish pink; legs and feet pinkish, webs blackish.

Young in down (fide *Baldamus*, Cab. Journ. 1870, p. 280). Differs from every other Duck in this plumage that I know in having a double olive-grey stripe from the lores, dividing before the eye, and bordering the yellowish grey eyebrow above and the cheeks and auriculars below; upper parts, crown from the base of the bill, nape, back, and wings dull olive-grey, excepting the spot on the shoulder, which, with the rest of the body, is pale yellowish grey; iris dark brown; bill reddish brown, with the nail white; feet ash-grey, with a greenish tinge, webs and toes narrowly edged with yellowish white.

This beautiful Duck inhabits Southern and Eastern Europe, Northern Africa, and India, occasionally straggling into the northern part of Central Europe.

With us in Great Britain it is extremely rare. Mr. Harting, in his 'Handbook of British Birds,' enumerates sixteen instances of its occurrence between 1818 and 1869, all of which, with one exception, appear to have taken place in the winter season. The first of these refers to a specimen obtained in Breydon Harbour, Norfolk, in July 1818, as recorded by Hunt. Mr. Henry Stevenson, writing to me respecting the occurrence of this species in Norfolk, gives the following particulars respecting this and other specimens obtained in that county:—"Yarrell claims credit for first noticing this species in England, as killed near Boston in January 1826; but I claim the species first for Norfolk, as Hunt, in his 'British Ornithology,' vol. ii. p. 333, figured a female, of which, after citing it as the first recorded as killed in this country, he says 'the specimen from whence our drawing was made was killed on Breydon in the month of July 1818, and is now in the possession of Mr. Youell, of Yarmouth, to whose kindness we are greatly indebted. We are informed that a specimen of the male was killed in Norfolk a few years since, and was

preserved in the London Museum'*. In Hunt's 'List of Norfolk Birds,' published in Chambers's 'History of Norfolk' (vol. i.), published in 1829, is a notice of two more shot on Breydon in 1826, and a male at Surlingham Broad in December 1827. The latter is confirmed by a MS. note of the late Mr. Lombe, of Great Melton, near Norwich, who made a note of it in his copy of Montagu's Dictionary, and describes it as an immature male.

"In 1844, January 12th, an adult male shot on Horsea mere, near Yarmouth, mentioned by Yarrell.

"1867, February. An adult female shot on Hickling Broad, near Yarmouth.

"The late Thomas Spalding, of Westerton, had in his collection (dispersed last November) a fine adult male, shot by himself many years back, on Euston Broad, near Southwold, Suffolk; and the late Mr. Newcome, of Feltwell, had in his collection an adult male, said to have been taken some years back in a decoy at Colchester, Essex."

Mr. John Henry Gurney also informs me that he possesses "a male in nearly adult plumage, killed many years ago at Gurlingham, from the collection of the late Mr. Thurtell, of Norwich—also another male in full dress, killed some years ago (near Yarmouth, I believe), and which was formerly in the collection of the late Mr. Stephen Miller, of Yarmouth. Much more recently Mr. Rising, of Horsea, added to his collection an adult male, said to have been killed in that neighbourhood." Amongst the instances of its occurrence cited by Mr. Harting are one from Cornwall, in February 1845, and one from North Devon. Respecting this last Mr. Gatcombe writes to me that "a magnificent male was obtained at Braunton (North Devon) on the 24th of December, 1867, and is now in the collection of — Scott, Esq., of Chudleigh, Devon. The white portions of the plumage of this bird were tinged with a beautiful blush rose-colour. I have bought this species in Leadenhall market, where it is called the 'orange duck.'"

In Scotland it only appears to have occurred once, there being a specimen in the collection of Captain Orde, of Kilmory, which, according to Dr. Sclater, who exhibited it at a Meeting of the Zoological Society (P. Z. S. 1862, p. 163), "was obtained in January 1862 on a freshwater lake in Argyllshire, where it was observed in company with Golden-eyes (*Clangula glaucion*)." From Ireland it has not been recorded; nor does it appear to occur in Sweden or Norway, though Nilsson (Skand. Faun. p. 459) refers to a Duck having been seen near Gothenburg supposed to be this species. According to Kjærbölling it is said to occur, and even breed, in the Danish provinces; but I greatly doubt the correctness of this assertion. Mr. Taczanowski informs me that it occurs, but is very rare, in Poland; and Borggreve (p. 134) refers to it as a not uncommon straggler to North Germany; and Dr. E. Rey, of Halle, writes to me that "Just states that it often occurs on the Salziger See in large numbers; and Naumann writes that it breeds on both lakes; now, however, only a few pairs breed on the small pond near Wanzleben, whence I obtained seven eggs on the 2nd of June, seven on the 11th, three on the 1st of July, and two on the 13th of August."

In Belgium it is of very rare occurrence; and only a single specimen was obtained in the Duchy of Luxemburg in 1851: another was also killed near Metz in 1815. Messrs. Degland and Gerbe write that it has been killed at intervals in many parts of the north of France; and

"* Not included in Bullock's Sale Catalogue: this was called 'The London Museum.' Not in Gray's List of Brit. Mus."

Jaubert and Barthélemy-Lapommeraye record it as of very rare and irregular occurrence in Provence.

In Spain it is comparatively a common species. When in Valencia in May 1866 I saw several specimens in the museum of that town, which had been obtained in the Albufera, at which place I also saw the bird, and was told that it breeds there, but I had not time to remain and search for the nests. Mr. Howard Saunders writes (Ibis, 1871, p. 397), "I never obtained this bird in the flesh in Andalucia, and am inclined to consider it rare. In the Albufera, of Valencia, I found it very abundant in 1863; and though now sadly reduced in numbers, it was the only species of Duck I found there last May." Lord Lilford informs me that he found it "abundant on the Albufera in September 1856." Mr. A. von Homeyer (Journ. f. O. 1862, p. 434) found it breeding on Mallorca, where he observed two pairs on the Prat.

In Italy it is a common species during the summer, according to Salvadori (J. f. O. 1865, p. 325), arriving in the spring and leaving again in August. He once saw in April about twenty individuals in one flock. Mr. Howard Saunders records it as one of the commonest breeding Ducks in Sicily; and Professor Doderlein states that it is "abundant in the marshes of Catania, Lentini, and Terranova, especially in winter and spring, when arrivals take place from the south. A good many pairs breed in the above localities; and Cav. L. Benoit obtained the eggs." According to Mr. C. A. Wright (Ibis, 1864, p. 156) it has occurred in Malta, where "a specimen was obtained on the 1st of September 1861. I was only in time to secure the bill and legs, which were enough to determine the species; the rest had been consigned to the pot. Mr. Tristram, I believe, has also observed it in Malta." Lord Lilford found it common at Butrinto during the winter; but both Lindermayer and Von der Mühle agree that it is rare in Greece, the latter stating (Vög. Griech. p. 165) that "even in the most severe winters it is a very rare species, only observed in Rumelia and in the marshes of the Peloponnesus, but not in the Greek archipelago." In Southern Germany it is, according to Fritsch (J. f. O. 1872, p. 370), "found, and in former years bred on the Pardubicer ponds. Mr. Lokaj got one in the Prague market, and obtained one in the summer from Neuhaus." The Ritter von Tschusi Schmidhofen informs me that "it occurs in Moravia; and, according to Heinrichs, one was shot some years ago at Littau; and a pair are in the Brünn Museum, which were shot in 1842; several have been shot on the Danube, two in the winter of 1830 on the Hofgarten ponds at Kremsmünster (*Hinterberger*). In 1868 one was sent to the Linz Museum. In 1829 one was shot on the Mondsee, and is now in the St.-Peter's collection at Salzburg; and in the Vienna Museum is an adult male, shot on the Neusiedler lake, in Hungary, in 1818, and a young male shot in November 1829." Messrs. Elwes and Buckley met with it in Turkey, where, they write (Ibis, 1870, p. 340), it is "not uncommon in some parts of the country, and said by Mr. A. Cullen to breed in the Dobrudscha. We shot a female on the Inkermann river in March."

I do not find it recorded from Asia Minor; nor does Captain Shelley include it in his list of birds found in North-east Africa, though Schlegel (Mus. Pays-Bas, *Anseres*, p. 25) speaks of it as occurring in Egypt; and Von Heuglin (N.O. Afr. p. 68) records it from "Lower Egypt in winter." It appears to be common in Algeria. Canon Tristram writes (Ibis, 1860, p. 81) that he "occasionally procured it in the Wed R'hir and at El Aghouat;" and Mr. Osbert Salvin (*l. c.* 1859, p. 358) saw numbers in the marshes of Zana, where he also found them breeding.

To the eastward it occurs from the Caspian, where it was obtained by Ménétries at Bakou, to the temperate parts of India, but it is not recorded from Siberia by any of the Russian travellers. Dr. Jerdon (B. of Ind. iii. p. 811) says that "it is found throughout the greater part of India, is more rare in the south, and chiefly frequents the larger tanks and jheels. It generally keeps to the middle of the tanks, and is a wary bird, not usually allowing a near approach. Its flesh is juicy, tender, and high-flavoured, and is by some considered the finest Duck for the table. A writer in the 'Indian Sporting Review' remarks that during the day they are constantly on the move, now pursuing one another, now screaming, all up at once, then down again." Dr. Leith Adams (P. Z. S. 1858, p. 510) records it as "a winter visitor on the lakes and rivers of the Punjab. Not common;" and Major Irby (Ibis, 1861, p. 250) found it exceedingly numerous in Oudh and Kumaon in the cold season.

In its habits the present species very closely resembles the Common Pochard, and like that species is usually found frequenting freshwater lakes and marshes. Exceedingly shy, it can only be approached within a considerable distance, and is most difficult to shoot. It does not dive, but, like the Mallard, when feeding in shallow water it turns end up, and stretching down its neck reaches and plucks up the water-plants on which it feeds. It is not solitary in its habits, but several are often seen together in company, though at the same time it rarely consorts with others besides its own species.

Its call-note is, by Naumann, said to be very harsh, not unlike the croak of a Crow, and much more closely resembling that than the quack of a Duck; it is, however, not often uttered, only when the bird flies up, or when it is in the immediate vicinity of its nest. It feeds on water-plants, aquatic insects, small freshwater shell-fish, and fish- or frog-spawn; but its chief food consists of vegetable matter of various sorts.

It places its nest close to some sheet of fresh water, and deposits from eight to nine eggs. Mr. Osbert Salvin and Canon Tristram both found it breeding in Algeria. The latter writes (Ibis, 1860, p. 164) that at Halloula he "obtained a single egg of the Red-crested Whistling Duck in the open swamps. My companion shot the bird as it rose from the nest. *Fuligula rufina* breeds sparingly at the lake, but remains there throughout the winter. The males appear to desert the locality as soon as the females sit, and are never seen again until the end of the autumn. I have observed that the female erects her scanty crest in imitation of her mate, and proudly throws back her head, walking with a stately gait. The nest is like that of the Coot, but not so large, better-concealed, and without the gangway of rushes built by the other." Mr. Salvin also writes (Ibis, 1859, p. 363) that "in the open pools at the upper end of the marsh of Zana, I used frequently to see several pairs of the Red-crested Duck. Two nests only were obtained. The second lot, consisting of seven eggs, were of a most brilliant fresh green colour when unblown; the contents were no sooner expelled, and the egg dry, than the delicate tints were gone, and their beauty sadly diminished."

Dr. E. Baldamus (Jour. f. O. 1870, p. 278) gives a most interesting account of the breeding of this Duck in Central Germany, from which I translate the following:—"*Branta rufina* breeds on a pond overgrown with reeds, flags, and other aquatic plants, and situated close to the Mansfelder (or Eisleber) salt lake, where I discovered this beautiful Duck four years ago. Since then I have visited this interesting pond annually, and have had repeated opportunities of

observing its nesting-habits. It arrives late in March or early in April, sometimes as late as the middle of April, at its breeding-haunts, but does not appear to commence preparing its nest before the end of that month, as no complete sitting of eggs was found before the middle of May." Dr. Baldamus then gives a list of the nests he took in 1866–70, ten in number, showing that they were taken between the 12th of May and the 1st of July, the last being strongly incubated, and containing living young. He further states that "the nest is always placed in the rushes or flags, usually on a small island in the pond or on the flags; and, like all Ducks' nests, it has a foundation of rotten stems of rushes or dead leaves, on which a warm bed of down is placed, this down being plucked from the breast of the female. When the female leaves the nest quietly, she covers her eggs, as do all the Ducks, even our common tame species. In number the eggs vary from eight to nine, ten being an exception, and seven only in late-laid sittings. I have already described the eggs in 'Naumannia,' and in the appendix to Naumann's 'Naturg. d. Vög. Deutschl.,' and will only add here that the colour, which runs into olive-green, varies but little, and in size they vary from 56 to 60 millimetres in length, and 40 to 43 in breadth. . . . . During the time the female is sitting the males are to be seen on the water with those of *ferina*, *leucophthalmus*, and *clypeata*, but generally somewhat apart from them. In 1866 I counted twelve, in 1868 sixteen, and this year (1870) fourteen males on the pond. Thus they have increased in numbers in spite of the first eggs being regularly taken away and many young birds, besides a few old ones, shot. I have done all I could to protect this lovely Duck, which there is usually called 'Königs Ente' [or 'King-Duck'], and hope next year to be able to rear the young ones."

I have three eggs of those obtained by Dr. Baldamus in my collection, which are pale greenish grey in colour, and closely resemble the eggs of the common Pochard, but are, if any thing, a trifle lighter in colour. In size they average $2\frac{11}{40}$ by $1\frac{24}{40}$ inch.

The specimens figured and described are in the collection of Mr. H. J. Elwes, to whom I am indebted for the loan of them.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Northern India. *b*, ♂, *c*, ♀. Sicily, April 1873 (*Doderlein*).

E Mus. H. J. Elwes.

a, ♂ *ad.* Bosphorus (*Robson*). *b*, ♀ *ad.* Inkerman, March 10th, 1869 (*H. J. E.*). *c*, ♂ *ad.*, *d*, ♂ *juv.*, *e*, ♀. Calcutta bazar.

E Mus. Baron A. von Hügel.

a, ♂ *ad.* Sarepta, April (*Möschler*).

E Mus. H. B. Tristram.

a, ♂ *ad.* Lake Halloula, Algeria, June 12th, 1856 (*H. B. T.*).

E Mus. Howard Saunders.

a, ♂, *b*, ♀. Valencia, summer (*H. S.*).



J.G.Keulemans lith

Hanhart imp.

SCAUP.
FULIGULA MARILA.

FULIGULA MARILA.

(SCAUP.)

Anas glaucium minus striatum, Briss. Orn. vi. p. 416 (1760).
Anas marila, Linn. Syst. Nat. i. p. 196 (1766).
Anas subterranea, Scopoli, Ann. i. Hist. Nat. p. 67. no. 83 (1769).
Le Millouinan, Buff. Hist. Ois. ix. p. 221 (1783).
Anas fraenata, Sparrm. Mus. Carls. fasc. ii. pl. 38 (1787).
Aythya marila (Linn.), Boie, Isis, 1822, p. 564.
Fuligula marila (L.), Steph. in Shaw's Gen. Zool. xii. ii. p. 198 (1824).
Platypus marilus (L.), C. L. Brehm, Lehrb. Naturg. eur. Vög. ii. p. 830 (1824).
Nyroca marila (L.), Flem. Brit. Anim. p. 122 (1828).
Aythya islandica, C. L. Brehm, Vög. Deutschl. p. 911 (1831).
Aythya leuconotos, C. L. Brehm, op. cit. p. 913 (1831).
Fuligula gesneri, Eyton, Cat. Brit. B. p. 58 (1836).
Marila frenata, Bp. Compt. Rend. xlii. part ii. p. 651 (1856).
Fulix marila (L.), Baird, B. of N. Am. p. 791 (1858).
Aythya marila (L.), Fritsch, Journ. für Orn. 1872, p. 371.

Canard milouinan, French; *Moretta grigia*, Italian; *Bergente*, *Moorente*, German; *Toppereend*, Dutch; *Bjergand*, Danish; *Dukönd*, *Hrafnsönd*, Icelandic; *Bjergand*, Norwegian; *Hvitbuk*, *Bergand*, Swedish; *Tunturi-sotka*, Finnish; *Goloubaïa-Tschernett*, *Belogláska*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 1002; Werner, Atlas, *Palmipèdes*, pl. 54; Kjærb. Orn. Dan. Suppl. taf. 27; Fritsch, Vög. Eur. taf. 48. fig. 9, taf. 51. fig. 5; Naumann, Vög. Deutschl. taf. 311; Sundevall, Svensk. Fogl. pl. 62. figs. 1, 2; Gould, B. of Eur. pl. 371; id. B. of G. Brit. v. pl. 24; Schlegel, Vog. Nederl. pl. 313; Audub. B. of Am. pl. 498; Wilson, Am. Orn. pl. 69. fig. 3.

♂ *ad.* capite, collo et pectore superiore nigris viridi nitentibus: dorso antico et scapularibus albis nigro transversim tenuissimè undulatis: uropygio, crisso et supracaudalibus nigris: remigibus primariis nigricantibus pogonio interiore cinereis, secundariis albis nigro apicatis: tectricibus alarum nigro-fuscis albido vermiculatis: pectore posteriore et abdomine albis, crisso et subcaudalibus nigricantibus: rostro et pedibus pallidè plumbescentibus: iride fuscâ.

♀ *ad.* fronte et regione ad basin rostri albis: capite et collo rufescenti-fuscis: dorso saturatè rufescenti-fusco, albido vermiculato: pectore posteriore et abdomine albis: hypochondriis fusco vermiculatis: crisso et subcaudalibus saturatè fuscis, albo vix vermiculatis: rostro et pedibus sordidè plumbeis.

Adult Male (Mezen, N. Russia, 19th June). Entire head, neck down to the fore part of the back, and

breast glossy black, the head and upper neck glossed with bottle-green; back and scapulars white, narrowly barred with black: wing-coverts blackish, finely vermiculated with white; primary quills blackish, the concealed bases of the inner webs brownish grey, secondaries white tipped with black, except some of the inner ones, which are glossy black; rump, upper tail-coverts, and tail black; underparts below the breast white, the lower abdomen slightly vermiculated with black; crissum and under tail-coverts black; bill and legs light lead-grey, webs blackish; iris yellow. Total length about 18 inches, culmen 1·85, wing 8·5, tail 2·8, tarsus 1·4.

Adult Female (Yorkshire coast). Fore part of the head and chin white; rest of the head, neck, and breast deep reddish brown; upper parts dark brown, the back slightly vermiculated with white; underparts white below the breast, the lower part of which is marked with white; flanks vermiculated with brown; crissum and under tail-coverts dark brown, slightly vermiculated with white; bill and legs darker than in the male.

Young (Amoy, November). Resembles the female; but the upper parts are darker and duller, and the white on the fore part of the head covers a smaller area, and is marked with dark brown.

Young in down (Öland, 24th July). Crown, nape, and upper parts uniform dark olive-brown; throat, sides of the head, and fore part of the neck yellowish white; a dull greyish band crosses the lower neck, rest of the underparts dull yellowish, the flanks greyish yellow; upper mandible blackish, tooth of the beak yellowish; under mandible yellow.

Obs. The male assumes in the late summer a plumage resembling that of the female; but the brown on the head and neck is blackish brown, the back is more barred with dirty white, and the beak is lighter blue, and the eyes richer yellow in colour.

During the breeding-season the Scaup inhabits the northern portions of Europe, Asia, and America, migrating south in the early winter as far as North Africa, Northern India, China, and Mexico. With us in Great Britain it is only a winter visitant; and though stragglers occasionally remain late in the spring, there is no instance of it having been found breeding in the British Isles. Yarrell says that it seldom appears till the end of October or beginning of November, about which time, if the weather be rough or cold, they arrive in small flocks on various parts of the coast and at the mouths of rivers, but do not often visit the waters of inland counties. It appears to be generally distributed on all our coasts in suitable localities, in the south of England as well as in the north of Scotland, and is said to be more numerous on the English than on the Scotch shores. Mr. Cordeaux says that it is "one of the commonest of our Humber Ducks, arriving late in the autumn, about the first week in November, in considerable numbers on the river and along the Yorkshire and Lincolnshire seaboard;" Mr. Hancock speaks of it as being abundant off the coasts of Northumberland and Durham in severe winters; and Mr. Robert Gray writes (B. of W. of Scotl. p. 385) as follows:—"This Duck is, perhaps, the least common among the ordinary sea-ducks that frequent the western shores of Scotland. Being partial to mud-flats, it is found chiefly near estuaries, remaining for the most part out at sea in the daytime (where it dives like the Scoters in quest of mollusca and crustacea), and coming southwards in the evening for a change of diet. I have observed that it will often prefer swimming instead of flying to its night-quarters; and after repeatedly noticing this habit, I have lain in wait on an outlying

rocky skerry at the river's mouth, knowing I was sure of a shot. Sometimes in very hard winters the flocks of Scaup Ducks are large; but usually the birds live in small groups, occasionally mixing with Golden-eyes and Scoters. On the Outer Hebrides a few frequent the oozy shores between North Uist and Benbecula on both sides, from the Isle of Gremsay on the east, of Baleshare on the west. Late in autumn these small parties are seen there at nightfall dabbling in the mud left bare by the tide; and they usually remain in the neighbourhood of this well-known ford throughout the winter. In very stormy weather they appear to seek shelter in the Sound of Harris, where a stray bird occasionally falls to the gun by accident, the species being notorious for the rankness of its flesh, and consequently not in request. Mr. J. Macdonald informs me that in the dusk of evening, when one kind of bird is hardly distinguishable from another, he knocks over a Scaup at times instead of a Mallard, but that its numbers are comparatively small, the birds only coming in his way when continued bad weather forces them into the sound.

"Mr. Graham states that this species is a regular winter visitant to Iona and the shores of Mull, and that it is often killed near the coast in fresh water. It is likewise seen occasionally on the shores of Islay.

"Scaup Ducks appear to linger through the summer in some parts of Scotland. One instance is given by Sir William Jardine, who shot a female bird near Loch Erribol, in Sutherlandshire; and Dr. Saxby states that it is occasionally observed in summer in the Shetlands." Dr. Saxby, speaking of the occurrence of the Scaup in Shetland, says (B. of Shetl. p. 255):—"It is not easy to determine the exact times of the arrival and departure of this species. From October to April one or two appear suddenly upon some particular part of the coast, and often as suddenly withdraw; yet they not unfrequently remain in some favourable locality for several weeks at a time. Deep, quiet voes are very attractive; and there is perhaps scarcely one such voe in Shetland that is not visited at least once in a season, even though by very small numbers at a time. The largest number I ever saw in one day was five, and they kept far apart. Baltic Sound, in Unst, and Basta Voe, in Yell, each running inland for about three miles, and abounding with various mollusca, are, perhaps, as frequently visited by the oceanic Ducks as any similar localities throughout the islands."

In Ireland, according to Thompson, the Scaup is a regular winter visitant to the coast, and is the most plentiful of the *Fuligulæ*. It usually arrives in September, sometimes at the end of August; and a few sometimes remain as late as April and May.

In Greenland the Scaup is of rare occurrence. Professor Newton says that Dr. Walker of the 'Fox,' R.Y.S., obtained one at Godhavn in August 1857, and three were sent from Nenortalik in 1859. In Iceland the Scaup is common, and, Faber says (Prodr. isl. Orn. p. 72), is the most numerous of the water-fowl which breed at Myvatn. About the middle of March it arrives on the freshwater ponds in the south of the island, and a month later it is seen on Myvatn. Early in October flocks of this species are seen in the bays; and by the end of October they have all left. According to Captain Feilden it is common in the Færoes in autumn and winter, and occasionally a pair or two remain over the summer. He saw a single pair on a small lake in Stromoe on the 20th of May, 1872. Throughout Scandinavia this Duck is tolerably common during the breeding-season, and remains over winter in the southern districts. Mr. Collett says

that it breeds chiefly on the fell-lakes in the southern portions of Norway, and is common on the Dovre, the Gudbrandsdals, and Valders fells, and all the mountains branching out from them, as also on the Langfells, in Aaseral down into Christiania Stift. North of the fell-range it is less numerous, but breeds in East Finmark, on the Polmak Elf. It visits the southern and western fiords on passage, and winters in large numbers all round the south coasts. Nilsson says that it breeds in Swedish Lapland, and occasionally also far south in Sweden. He received eggs from North-east Skåne, which he believes to be those of this species; and it certainly has bred on the islands off Ljungby. Meves says that he found it breeding commonly on Öland near the coast. Palmén says that on the whole it is rather rare in Finland, where it breeds in the far north, arriving at its breeding-haunts early in June. Malm met with it in Enare up to 69° N. lat.; Grape records it from Enontekis; Zetterstedt observed it at Wittanki, Von Wright at Mukkavuoma; and Wolley met with it on the fells near the Norwegian frontier. Elsewhere in Finland it breeds only here and there. Nylander says that it breeds commonly on Karlö, outside Uleåborg; and Alcenius states that it breeds in the Gamla Karleby and Wasa districts, where it is not rare on the coast and on the lakes. Von Wright believes that it breeds also in Eastern Finland; but it is only rare in the interior on passage, though it occurs regularly off Helsingfors in the spring and autumn.

In the north of Russia it appears to be common. I have received skins and eggs from Archangel; and in a small collection from there a curious pale variety, creamy brown in colour, of the female Scaup was sent. Messrs. Seebohm and Harvie-Brown, who obtained specimens on the Petchora river, write (Ibis, 1876, p. 444) as follows:—"On the 12th June, as we descended the river, the flag at our masthead disturbed a number of Wild Swans on a pond behind a fringing belt of willows. We landed; and while endeavouring to get a shot at another Swan upon another pool adjoining, we had an opportunity of adding the present species to our list. Peeping through the interstices of the willow-branches and old trunks, we saw a fine lot of Ducks swimming peacefully about upon the pond or lagoon formed by the overflow of the river. Before they were disturbed the seclusion and quiet of the place was perfect, reminding one of the same sort of scene in a wildfowl-sanctuary at home. The same species of birds were there too. Two Widgeons were in the foreground, the male occasionally whistling as he floated lazily about; a little further off were two Teal; and up and down over the surface of the water were a number of fine Scaup Ducks swimming in pairs or small parties, frequently uttering their harsh cries. At the far end a solitary Swan floated, its head high, and its neck straight, already on the *qui vive*. The Scaup Ducks shortly became suspicious, and swam up close together. The Swan took the hint, and, beating the water with his wings, rose and flew off, followed by Scaups, Widgeon, and Teal. We afterwards found the Scaup not uncommon in certain localities, but did not meet with any further north than Yooshina. They did not appear to be abundant at Alexievka, as the Zyriani only brought in one set of eggs and down."

Mr. L. Sabanäeff informs me that the present species occurs in Central Russia and the Ural range only on passage, and is somewhat rare; but in Poland, according to Mr. Taczanowski, it is common during migration, none remaining there to breed. On the coasts of North Germany, Borggreve says, it is the commonest species, excepting *Harelda glacialis*, during the winter, and hundreds are netted on the Baltic coasts. On fresh water it is rather more numerous than

Harelda glacialis. Blasius says that it has been known, as an exception, in Brunswick, and in one instance it has bred in the Hiddensee.

In Denmark, Mr. Collett says, it is very common during the winter, arriving in October and leaving again in March and April; but stragglers are occasionally seen as late as June, though there does not appear to be any instance of its having been found breeding there. On the coasts of Holland, Belgium, and Northern France it is a regular and numerous autumn and winter visitant, but rarely occurs inland, and is of only occasional occurrence in Provence and elsewhere in the south of France. . Professor Barboza du Bocage includes it in his list of the birds of Portugal with a query; and its occurrence is rare in Spain. Colonel Irby states that it seldom visits the Straits of Gibraltar, but has been observed in Gibraltar Bay in December. It visits Savoy during severe winters; but there, as well as in Italy, it is only a rare straggler, being less frequently met with in Southern Italy, and has not been obtained in Sicily. It is rare also in the South of Germany. Dr. Fritsch says that it visits Bohemia in the autumn, and also, though much more seldom, in the spring. In Austria it appears to be rather commoner; and Messrs. Danford and Harvie-Brown state (Ibis, 1875, p. 429) that in Transylvania it is not rare during passage and in winter. On the Southern Danube I never saw it during the short time I remained in that part of the country; but Dr. Krüper says that in the winter season it is not rare in Greece; Messrs. Elwes and Buckley speak of it as being tolerably common in Macedonia. In the Black Sea it is found during winter and on passage, and is not uncommon, Professor von Nordmann says, in the spring and autumn near Odessa. It winters on the coasts of Asia Minor; and Canon Tristram met with it on the coast of Palestine. It winters numerously in North-east Africa. Von Heuglin says that it is not rare in the winter, and is often seen in large flocks as well as singly, in the lagoons of Lower Egypt. He also observed it near Cairo, in Arabia Petræa, near Djeddah, and saw a pair in Abyssinia in December. Stragglers remain in Lower Egypt as late as the early part of May. On the west side of North Africa it appears to be less numerous. Loche says that it visits the coasts of Algeria in the autumn and winter, and a fine male, now in the Museum at Algiers, was obtained at Lake Halloula; but Favier does not appear to have met with it in Tangier.

To the eastward the Scaup is found as far as Japan. It is recorded from the Caspian; but Dr. Severtzoff did not meet with it in Turkestan, nor Messrs. Blanford and St. John in Persia. Dr. Jerdon, however, says that it visits India, though very rarely, and has hitherto only been recorded from Nepal.

In Northern Siberia it appears to be common. Von Middendorff met with it commonly breeding on the Boganida, where it did not appear before the 4th (16th) June. In September he shot it on the south coast of the Sea of Ochotsk. Dr. G. Radde, who found it on Lake Baikal, says that it only occurs there in the winter, and those which were seen at that season at the mouth of the Angara were chiefly young birds, old males being entirely wanting. Von Schrenck does not appear to have met with the Scaup. Dr. Dybowski, however, saw and shot it in Darasun on passage, but did not observe it in Kultuk. Swinhoe says that it visits the coasts of China and Formosa in winter; and Mr. Whitely states (Ibis, 1867, p. 208) that specimens were shot in Hakodadi Harbour, Japan, in May 1865.

On the American continent the Scaup is found both on the Atlantic and Pacific coasts. It

breeds in the Hudson's-Bay Territory, and migrates south in the winter as far as Texas (where I found it common in the winter on the east side), and Mazatlan, in Mexico (where it was obtained by Colonel Grayson on the west side). It has been recorded from the Saskatchawan, the Red-River Settlement, the Great Slave Lake, and various parts of Hudson's Bay, Canada, and New Brunswick. It is rare, however, in the last-named province, and is said to be rare also in Columbia. According to Wedderburn and Hurdis it has been met with in Bermuda, where a young bird was shot on the 19th December 1846, and two on the 8th January 1849. On the west coast it is, as above stated, found from Alaska southward to Mexico. Dall says that it is abundant at Sitka, where it was plentifully obtained by Bischoff. It is one of the first Ducks to arrive, and is common on the Yukon and the sea-coast. I obtained the eggs at the mouth of the Yukon in the early part of June.

Besides the present species, there is on the American continent another, closely allied bird (*Fuligula affinis*, Eyton), which differs in being considerably smaller in size, and in having the barring on the back much coarser—this latter species being entirely confined to the Nearctic Region.

As above stated, the Scaup does not breed in Great Britain, but arrives on our coast late in October, or, in exceptional cases, rather earlier than that; and its numbers increase until midwinter. It frequents the sea-coast, and is but rarely met with on inland waters, being found in bays and estuaries, frequently in large flocks. It dives with ease, obtaining its food chiefly by diving, and is often seen in company with the true diving ducks. It swims fast, and often sits deep in the water; and it flies with tolerable speed, usually at no great altitude above the surface of the water, and alights abruptly, as do most of the Ducks, on its hind parts. Mr. Cordeaux says, the Scaups are "usually the last Ducks to leave our waters in the spring. I have seen them off the coast in this parish late in May, the very latest occurrence being a single bird, an old male, on the 24th of that month. These Ducks appear to keep in pairs, male and female, throughout the winter, as we invariably find them in mixed flocks composed of about equal numbers of males and females. The Scaup swims high in the water. They are very expert divers, remaining immersed even longer than the Golden-eye; and I have frequently known them to continue underneath from fifty to sixty seconds. In the evening at dusk, and on moonlight nights, Scaups leave the water and fly up on the flats to feed; they are then often killed by our gunners who are lying in wait on the muds for Wigeon and Mallard." Montagu says that both the male and the female have a peculiar habit of tossing up their heads and opening their bills, which in spring is continued for a considerable time while they are swimming and sporting on the water, and they emit a grunting sort of cry. When caught and kept in confinement the Scaup soon becomes quite tame; and although in a wild state it feeds chiefly on marine mollusca, yet it soon accustoms itself to feeding on vegetable matter, and will freely eat grain, especially barley.

Thompson remarks that, though the Scaup feeds by day, yet it is a regular night-flying bird. In the stomachs of a considerable number of specimens, obtained from November to March in various years and all kinds of weather, he found almost exclusively minute univalve shell-fish. These are, he says, "*Littorina littorea* and *Littorina retusa*, *Lacuna quadrifasciata*, *Rissoa ulvæ*, *Cerithium reticulatum*, and *Nassa maculata*. One was filled with fragments of the bivalve *Nucula*

margaritacea; and another contained a number of the seeds of *Zostera marina* in addition to *Rissoa ulvæ*, this being the only instance in which any vegetable matter was found. Minute crustacea, as *Idoteæ* &c., I have likewise met with; large pebbles even, half an inch in diameter, are sometimes in them."

When feeding, the Scaup is, as a rule, very easy of approach; for it is far less suspicious than most of its allies, and will frequently allow a boat to come within gunshot-range without taking wing.

The present species breeds, as above stated, in the northern portions of both the Palæarctic and Nearctic Regions. The nest is placed on the ground under a bush, or well concealed amongst the high grass, more seldom in a hole or under a stone. Not unfrequently several females deposit their eggs in the same nest; and Dr. Krüper states that in Iceland he once found twenty-two eggs in one nest. The eggs are deposited from the early part of June to the middle of July; and when the female commences to incubate she sits very close, not leaving the nest until the intruder is close to it. The normal number of eggs appears to be eight or nine. I possess a nest and seven eggs of this Duck, taken by Mr. Meves on Öland, on the 5th July 1871. The nest consists only of grasses, without any down as lining; and the eggs are uniform greyish stone-buff in colour, and vary in size from $2\frac{18}{40}$ by $1\frac{27}{40}$ to $2\frac{20}{40}$ by $1\frac{31}{40}$ inches.

The specimens figured are the adult male and female above described, both of which are in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Yorkshire coast. *b*, ♂ *ad.* Mezen, N. Russia, June 19th, 1873 (*Piottuch*). *c*, ♂ *ad.* Uima, Archangel, May 10th, 1874. *d*, ♀ *var.* Archangel, 1874 (*Piottuch*). *d*, *juv.* Amoy, China, November 1866 (*R. Swinhoe*). *e*, *pull.* Öland, July 27th, 1867 (*Meves*).



E. Neale del
W. Hart lith

TUFTED DUCK

FULIGULA CRISTATA

FULIGULA CRISTATA.

(TUFTED DUCK.)

Anas glaucium minus, Briss. Orn. vi. p. 411, pl. xxxvii. fig. 1 (1760).
Anas fuligula, Linn. Syst. Nat. i. p. 207 (1766).
Le Morillon, Buff. Hist. Nat. Ois. ix. p. 227, pl. xv. (1783).
Le petit Morillon, Buff. tom. cit. p. 231 (1783).
Anas cristata, Leach, Syst. Cat. M. & B. Brit. Mus. p. 39 (1816).
Nyroca fuligula (L.), Flem. Phil. of Zool. ii. p. 260 (1822).
Aythya fuligula (L.), Boie, Isis, 1822, p. 564.
Fuligula cristata (Leach), Steph. in Shaw's Gen. Zool. xii. pt. 2, p. 190 (1824).
Platypus fuligulus (L.), C. L. Brehm, Lehrb. d. Naturg. eur. Vög. ii. p. 833 (1824).
Aythya cristata (Leach), C. L. Brehm, Vög. Deutschl. p. 916 (1831).

Le Morillon, French; *Negrinha*, Portuguese; *Moretta*, Italian; *Braimla*, Maltese; *Reiherente*, *Haubenente*, *Schopfente*, German; *Kuifeend*, Dutch; *Troldand*, *Vibeand*, *Topand*, Danish; *Topand*, Norwegian; *Vigg*, Swedish; *Jouhisotka*, Finnish; *Tschernett*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 1001; Werner, Atlas, *Palmipèdes*, pl. 57; Kjærb. Orn. Dan. taf. 47, Suppl. taf. 27; Frisch, Vög. Deutschl. taf. 170, 171; Fritsch, Vög. Eur. taf. 48. fig. 11, taf. 51. fig. 1; Naumann, Vög. Deutschl. taf. 310; Sundevall, Svensk. Fogl. pl. 62. fig. 3; Gould, B. of Eur. pl. 370; id. B. of G. Brit. v. pl. 23; Schlegel, Vog. Nederl. pl. 312; Roux, Orn. Prov. pls. 375, 376.

♂ *ad.* capite, collo, pectore et corpore suprà nitidè nigris: occipite cristato: capite et collo purpureo nitentibus: dorso, scapularibus et tectricibus alarum punctis albidis minutissimis irroratis: remigibus primariis nigris, intùs versus basin cinereis, secundariis albis nigro terminatis: pectore postico et abdomine albis, subcaudalibus nigris: hypochondriis griseis albo tenuissimè undulatis: rostro pallidè plumbeo, nigro terminato: iride flavâ: pedibus plumbeis olivaceo tinctis, membranâ natatoriâ nigrâ.

♀ *ad.* capite, collo, pectore et corpore suprà sordidè rufescenti-fuscis vix purpureo tinctis: abdomine griseo ferrugineo-fusco intermixto: cristâ occipitali breviore.

Adult Male in winter (Thames, 25th March 1871). Head, neck, breast, and upper parts generally glossy black, the head having a long crest and glossed with purple; back with indistinct vermiculations on some of the lateral feathers; primaries blackish on the outer web and at the tip, and greyish on the inner webs; short secondaries white, tipped with black; inner secondaries black; underparts below the breast white, on the lower abdomen washed with grey; under tail-coverts black; bill lead-blue, tipped with black; iris yellow; legs dull olive-plumbeous, with blackish webs. Total length about 15 inches, culmen 1·8, wing 8·2, tail 2·8, tarsus 1·5.

Adult Female (Archangel, 15th May). Head, neck, breast, and upper parts generally blackish brown, with a faint purplish gloss; abdomen brownish grey, becoming dark brown on the under tail-coverts; wings and tail as in the male, but browner; head with a very short crest; forehead tinged with brownish white.

Adult Male in late summer. The summer plumage of the male, which, as in other Ducks, is retained for a very short time, differs from the winter dress in being browner on the head and neck; the back and lower neck are as if powdered with greyish white, but this powdering is indistinct; the nuchal tuft is much shorter than in the winter.

Young Male. Resembles the old female, but is duller in colour, the head and neck being less distinctly brown in tinge, and the abdomen is whiter and less tinged with brown.

Young in down (S.E. Ural, 29th July). Crown, nape, neck, and upper parts generally dark olive-brown, unmarked; a small irregular streak over the eye and a spot on the ear dull greyish yellow; chin and sides of the neck and abdomen greyish yellow; lower flanks and lower part of the tail olivaceous; bill olivaceous green; legs similarly coloured, but darker; iris greyish white.

Generally distributed throughout Europe, but breeding only in the northern districts, the Tufted Duck ranges southward into North Africa in winter. It is also found in Asia as far east as Japan, and ranges south into Southern India.

In Great Britain it is, as a rule, only a winter visitant; but it has been recorded as having bred here on several occasions. Mr. A. G. More, in his notes on the birds which have been found breeding in Great Britain, writes (Ibis, 1865, p. 446) as follows:—"Mr. Borrer tells me that a brood of Tufted Ducks was found near Horsham in May 1853, and another at West Grinstead in 1854. Mr. W. A. Slaney writes that the bird is common on the large meres of Stafford and Shropshire, and that he has known of one nest in the latter county. Sir William Milner and Mr. E. Newton have recorded the occurrence of several nests in Nottinghamshire (Zoologist, p. 4440; Trans. Tyneside Nat. Club, vol. v. p. 40). And in the 'Zoologist' (p. 2879) mention is made of a brood observed on Malham Water, in the West Riding of Yorkshire." According to Mr. Hancock (B. of North. & Durh. p. 155) it is "not uncommon in Northumberland and Durham in the winter season, and has bred three times at Wallington. In 1858 Sir W. C. Trevelyan, Bart., informed me that a small Duck had been seen with a brood of eight or nine young that year on a small pond, near the house, at Wallington, but he was not able to determine the species. In the following year Sir W. C. Trevelyan wrote to inform me that the Duck had again appeared at Wallington. At his invitation I visited the spot on the 24th of May, and by the aid of a glass saw both parent birds; and I distinctly made out that they were Tufted Ducks, male and female."

In Scotland, according to Mr. Robert Gray (B. of W. of Scotl. p. 386), it is "more frequently obtained in severe winters than in open seasons. This may arise from its habit of keeping out at sea, or well off shore in the firths and estuaries in moderate weather, and coming into our rivers to feed when it is too rough outside. On the Clyde numbers are killed every week throughout the winter and sent to the Glasgow market; and limited numbers are also shot on some of the inland lochs and ponds from October to March. I have seen small flocks of this

bird, on two or three different occasions, flying at great speed up the river Clyde, a few feet above the surface of the water, and reaching even the Glasgow Bridge at Broomielaw. In the Outer Hebrides it occurs but sparingly. I have seen it as early as September, and have likewise procured it from Benbecula, later in the season, in the plumage of the first year." In Shetland, Dr. Saxby writes (B. of Shetl. p. 256), it is "only a rather uncertain winter visitant, arriving at irregular intervals soon after the commencement of autumn, and staying until spring, when the weather is not too severe for it to remain upon the lochs. Should these become frozen, it resorts to the sea-coast, where, however, it will not remain long, taking a final leave of the islands if the frost continues more than a week. It apparently submits to a marine diet simply as a makeshift; for it eagerly returns to the lochs as soon as the ice begins to disappear. It is never common, but is perhaps somewhat overlooked on account of its mingling with the flocks of Golden-eyes which frequent the larger inland waters. Sometimes a single individual is the sole occupant of a retired inland loch for weeks at a time. All that I have examined have had insects or larvæ in the stomach; but twice I have discovered fish-spawn in considerable quantities."

It has lately been found breeding in Scotland by Mr. A. B. Brooke, who, in a letter from Cardney, Dunkeld, N.B., to 'The Ibis' (Ibis, 1875, p. 514), writes as follows:—"Finding only, as far as I can discover, one well-authenticated instance of the Tufted Duck (*Fuligula cristata*) breeding in Great Britain (Yarrell, 3rd ed. vol. iii. p. 354), it will, I am sure, interest many to know that last week I saw two fine broods, eight young birds in each, on Butterston Loch, one of the three lochs so well known in this neighbourhood. They were just newly hatched; and their diving was so incessant that it was some time before I could count them. For the last two seasons I have suspected them of breeding here, having seen the old birds late on in the summer. There are several other pairs of these Ducks on the loch now; and I have no doubt most of them are breeding. The lochs are, and most likely always will be, strictly preserved; so I have no hesitation in making known the breeding-place of one of our rarer summer visitors."

In Ireland it is a tolerably common winter visitant, and is said to be the latest of the *Fuligulæ* arriving at Belfast Bay—as an experienced fowler informed Mr. Thompson, "even the month of December, in which he killed the first birds seen by him there in 1839 and 1840, being considered early. On fresh water, to which these Ducks are partial, they appear earlier; in the middle of November I have observed them on Ballydrain Lake, and have received specimens from Lough Neagh, among which were adult males as well as young birds. They have frequently been brought to me from the latter locality from this period until April, December and January being the months in which they were chiefly procured. But I have known them to remain there until May, on the 4th of which I saw one in 1850."

In Iceland the present species does not occur, nor does it seem to have been met with in Greenland. Professor Reinhardt includes it on the authority of Dr. Walker, who stated that it was obtained at Godhavn during the 'Fox' expedition in 1857; but Dr. Walker subsequently (Ibis, 1861, p. 198) withdrew this species from his list. Neither Captain Feilden nor Mr. H. C. Müller include it in their lists of the Birds of the Færoes; but, according to Mr. Collin (Skand. Fugl. p. 671), it was found breeding there in June 1872. Mr. Collett says that it breeds here and there both in the extreme north and in the south of Norway, but is nowhere numerous. It visits the southern and western coasts on passage. Sommerfelt states that it nests in Enare, and possibly in South Varanger.

It is tolerably abundant in Sweden, breeding in the northern districts; but occasionally a pair or two are said to remain to breed in Småland. Nilsson says that it is common near Gothenburg, on passage, in September and October and in March and April.

It breeds commonly in the north of Finland, and also, though less numerously, in the southern districts. I found it breeding near Uleåborg; and Von Wright says that it nests in Northern Savolax. According to Dr. Palmén it possibly breeds near Nyslott. Captain Pfaler states that it nests near St. Michel, and Mr. Knorring met with it on Ilmarijärvi, in Yläjärvi Kapell, near Näsijärvi. Sandberg met with it, though not commonly, in Kankaanpää, where it certainly bred in 1863. It is uncertain if it nests near Björneborg; but it certainly does on a lake at Nagu, near Åbo, and near Borgå. Ekebom met with it at Esbo; and it breeds in Wichtis. Bergstrand records it from Åland; and Mr. Sievers found it breeding numerously in 1872 on the bare cliffs around Klåfskär. It arrives in Finland late in April or early in May, and leaves again late in September or early in October.

In Russia it is very common in the north; and I have received many specimens from Archangel. Messrs. Seebohm and Harvie-Brown write (Ibis, 1876, p. 445), "it appeared to be scarce on the Petchora, as far as we could observe. The first was obtained by Seebohm at an island a little below Viski, on the 17th June; and on the 19th Harvie-Brown shot another on the island opposite Kuya. These were the only specimens procured; and not more than one or two others were identified." In Central Russia it is generally distributed. Mr. Sabanäeff says that it breeds throughout the Perm Government, but is only found on the steppe lakes on passage. In the Northern Ural and on the south-western slope it is very numerous. According to Artzibascheff it is common on the Sarpa, where it doubtless breeds. Mr. Taczanowski speaks of it as being common, on passage, in Poland; but it does not remain to breed there. In North Germany, however, it has been found nesting in several localities. Herr E. F. von Homeyer says (J. f. O. 1872, p. 338) that it used to breed regularly in Pomerania, on a floating island in the Leba lake; but this island was carried away by the ice, and he does not know whither they resorted for nidification after the destruction of their old home. As a rule, it is more frequently found on passage, and in winter, in Germany; and stragglers only remain to breed. Naumann appears to have been the first to record the fact that the Tufted Duck breeds in some numbers in Mecklenburg; and it has been subsequently confirmed by Borggreve and others; but it is doubtful if it is found in Silesia in the nesting-season. On passage it is not rare in North Germany.

It occurs on the coasts of Denmark in larger or smaller flocks, according as the season is severe or mild; and according to Steenstrup its nest was found on the Nors and Nebel lakes, in Thy, on the 3rd July 1834; but Mr. Benzon informs me that no one has met with it breeding there since then, although it has been carefully looked for. This last spring (1878) a pair settled down to nest on the Vintappermossen, about three miles from Copenhagen, but were driven off early in May. In cold winters, Mr. Benzon adds, this Duck arrives in considerable numbers from the north.

In Holland, Belgium, and the North of France this Duck is common in the winter, but it is not often met with far inland. Mr. Sachse informs me that it is very rare in Rhenish Prussia, except on the Rhine itself, where it is not so unfrequently obtained. He shot one on a small pond near Altenkirchen in March 1875; and on examining its stomach he found it to contain remains of *Dytiscus marginalis*.

Professor Barboza du Bocage speaks of it as being common in Portugal; and Colonel Irby writes (Orn. Str. Gibr. p. 203) that it is sometimes plentiful in winter on the Laguna de la Janda, in Spain, and is well known in the marismas. He has occasionally met with it in the Bay of Gibraltar.

In Italy, Sicily, and Sardinia it is common in winter, but does not remain to breed there. Mr. A. B. Brooke, speaking of its presence in Sardinia, writes (Ibis, 1873, p. 344):—"This, I think, is the most numerous of the Anatidæ in Sardinia; they are to be seen sitting by hundreds on all the stagnos, generally mixed up with Mallards, Pochards, common Teal, Garganeys, Pintails, Gadwalls, Coots, &c., with occasionally a single *Erismatura leucocephala* bobbing up and down with his white shining head in the middle." And Mr. C. Bygrave Wharton (Ibis, 1876, p. 28) found it in thousands on the east coast of Corsica in winter, numbers being there still as late as the end of April; but he saw none on the west coast. In Malta, however, it is of very rare occurrence in the winter. "One of these rare Ducks," Mr. Wright writes (Ibis, 1874, p. 240), "a fine male, was noticed in the market on the 19th November 1873, by Captain Feilden. The winter of 1873–74 has been remarkable for the large number of Woodcock, Duck, and Teal that have been taken here during the time of migration."

The Tufted Duck is very generally met with throughout Southern Germany on passage; but I do not believe that it has ever been found breeding there. Dr. Fritsch records it from Bohemia, Seidensacher from Styria, Harvie-Brown and Danford from Transylvania, Von Tschusi-Schmidhofen from Austria; and it is said to occur on the Lower Danube and in Turkey. Dr. Krüper says that it is not rare in Greece in winter; and Lord Lilford found it numerous in the Ionian Islands at the same season of the year.

In Asia Minor it is a tolerably regular winter visitant. Canon Tristram met with it in Palestine; and it is found in North Africa, being, Captain Shelley writes, most plentiful in Lower Egypt and the Fayoom, where he has frequently shot specimens. According to Von Heuglin it visits the Lower and Central Nile in autumn, winter, and spring, ranging south to Nubia. He met with it at Adowa, in Eastern Abyssinia, in December. Blanford, curiously enough, saw pairs on Lake Ashangi, in Abyssinia, in May. In North-west Africa it is also common. Loche and other naturalists speak of it as being a winter visitant to Algeria; and Mr. Salvin met with it numerously on the Lake of Bizerta in March. Near Tangier, according to Favier (*fide* Irby, *l. c.*), it is very abundant in some years, arriving in November and leaving for the north in February. In some seasons this Duck is not seen; but it was common in the winters of 1845, 1846, 1849, 1850, 1858, and 1861.

In Asia it is met with as far east as Japan. Mr. Hume came across it in Sindh, where, however, it was less common than most of the other Ducks. Dr. Jerdon says (B. of India, ii. p. 815), it is "very common in Central and Southern India, but less so in Bengal. It frequents open tanks, keeping well away from the edges, and is generally found in small or moderately sized parties. It is very late in leaving India; and I once killed one in June, near Hyderabad, in the Deccan." In Western India, according to Mr. Hayes Lloyd, it is not rare near Kattiawar; and he shot many in the neighbourhood of Baolee.

In Siberia it is common and generally distributed. Von Middendorff met with it in the Stanowoi Mountains; Dr. Schrenck found it very numerous on the Amoor, where it arrived about

the 20th May, and he saw it as late as the 11th September; Dr. Radde saw the first on the Tarei-nor on the 16th (28th) April, and in the Bureja Mountains on the 4th (16th) April, and as late as the 21st September (3rd October) on the Central Onon. According to Dr. Dybowski (J. f. O. 1873, p. 110) it is common in Dauria on passage, and remains to breed, arriving about the middle of May and leaving about the 20th October; and in China and Japan it is abundant, and generally distributed, from November to March.

In general habits the Tufted Duck differs but little from its allies, assimilating perhaps most closely to the Scaup, which species it much resembles when on the wing. It frequents fresh water during the breeding-season; but on passage and in the winter it is most generally to be met with on the sea-coast, and scarcely ever in reedy and marshy localities, such as it inhabits in the summer. It is gregarious, usually collecting in larger or smaller flocks during the winter; and, as a rule, it is rather a shy and cautious bird.

It dives extremely well, remaining long under the surface, and often coming up only for a second to get breath, diving again instantly. It is but a poor walker, and does not frequent dry ground for long, seldom straying far away from the water, and when disturbed usually waddles down and paddles off before taking wing.

It feeds chiefly on aquatic animals of various kinds, small shells, insects, fish, frogs, and tadpoles, usually obtaining its food by diving; but it also feeds, when frequenting fresh water, on vegetable matter, such as roots, seeds, and buds of aquatic plants.

As above stated, the Tufted Duck breeds in the northern portions of Europe, the eggs being deposited early in June. The nest is placed on the ground, not far from or even close to the water. A nest sent to me by Mr. Meves, taken at Muoniovaara, in Lapland, on the 20th June, consists of grass bents and a few leaves felted together with a mass of sooty brownish-black down having dull greyish-white centres; and the eggs, eight in number, are uniform pale olive-green or greenish buff in colour, smooth and polished in texture of shell, and in size average about $2\frac{12}{40}$ by $1\frac{26}{40}$ inch.

In regard to the synonymy of this species, it may be as well to make the following remarks:—*Anas scandiaca*, Gmel. (Syst. Nat. i. p. 520, 1788), and *Anas colymbis*, Pall. (Zoogr. Rosso-As. ii. p. 266, 1811), have both been included by Mr. G. R. Gray amongst the synonyms of this Duck, but, as it appears to me, incorrectly. Neither the diagnosis nor description of *Anas scandiaca* fit the Tufted Duck, but appear possibly to refer to the Shoveller; and Pallas's *Anas colymbis* may be a young male or a female of the present species; it is, however, very possible, as suggested by him, that it is nothing but a hybrid. He correctly describes the Tufted Duck under the name of *Anas fuligula*; and as his *Anas colymbis* is intended to refer to something different, though what, it is impossible to decide, this name must be altogether disregarded.

The specimens figured are the adult male and female above described, both of which are in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂, *b*, ♀. Archangel, May 15th (*Piottuch*). *c*, ♂. Mouth of the Thames, March 25th, 1871 (*H. E. D.*). *d*, *e*, *f*, ♂. Leadenhall Market, winter (*H. E. D.*). *g*, *pull.* South-eastern Ural, July 29th, 1872 (*Meves*).

Genus NYROCA.

Anas apud Güldenstädt, Nov. Comm. Petrop. xiv. p. 403 (1769).
Aythia apud Boie, Isis, 1822, p. 564.
Nyroca, Fleming, Phil. of Zool. ii. p. 260 (1822).
Fuligula apud Stephens in Shaw's Gen. Zool. xii. p. 201 (1824).

This genus contains only two species—*Nyroca ferruginea*, which inhabits the Palæarctic, Ethiopian, and Oriental Regions (its range being given in the following article), and *Nyroca australis*, Gould, which inhabits Australia. These Ducks frequent larger or smaller inland sheets of water, rivers, and streams, and also quiet and secluded bays and inlets of the sea and lagoons. They are somewhat shy and wary, fly swiftly and well, are excellent divers, usually procuring their food beneath the surface of the water. They feed on small mollusca, crustaceans, aquatic plants, insects, &c.; but they are said not to eat fish, as do many of their allies. They nest close to the water, scratching a hole in the ground under a bush, or selecting a convenient tussock of grass, the nest itself being a collection of down intermixed with a few grass-straws &c., and deposit numerous greyish or dull yellowish-buff eggs.

Nyroca ferruginea, the type of the genus, has the bill rather longer than the head, about as broad as high at the base, depressed, and widening towards the tip, which is rounded; unguis moderate, oval, decurved; nostrils small, oval, placed in the lower anterior portion of the nasal sinus; trachea with the tube much expanded in the middle, and again contracted above the inferior larynx, the latter partly osseous, partly membranous; wings rather short, pointed, the first quill longest; tail very short, much graduated; legs short, placed far aft; tarsus compressed, anteriorly scutellate; hind toe slender but broadly lobed, anterior toes nearly twice as long as the tarsus; claws small, slender, slightly curved, acute.

WHITE-EYED DUCK
NYROCA FERRUGINEA
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NYROCA FERRUGINEA.

(WHITE-EYED DUCK.)

Anas nyroca, Güld. Nov. Comm. Petrop. xiv. p. 403 (1769).
Sarcelle d'Egypte, Buff. Pl. Enl. x. pl. 1000 (1784).
African Teal, Lath. Gen. Syn. iii. pt. 2, p. 555 (1785).
Anas africana, Gm. Syst. Nat. i. p. 522 (1788, ex Lath.).
Ferruginous Duck, Lath. Gen. Syn. iii. pt. 2, p. 526 (1785).
Anas ferruginea, Gm. Syst. Nat. i. p. 528 (1788, ex Lath.).
Anas leucophthalmus, Bechst. Orn. Taschenb. i. p. 450 (1802).
Anas glaucion, Pall. Zoogr. Rosso-Asiat. ii. p. 268 (1811).
Aythya nyroca, Boie, Isis, 1822, p. 564.
Fuligula nyroca, Steph. Gen. Zool. xii. p. 201, pl. 55 (1824).
Nyroca leucophthalmos, Fleming, Brit. An. p. 121 (1828).
Aythya leucophthalmos, Brehm, Vög. Deutschl. p. 917 (1831).
Nyroca obsoleta, Brehm, Naumannia, 1855, p. 298.

Fuligule nyroca, French (*Degl. et Gerbe*); *Moorente*, German; *Negrete*, Spanish; *Ootka nyrok*, Russian; *Ziriguil*, Moorish (*Favier*); *Braimla*, Maltese.

Figuræ notabiles.

Buff. Pl. Enl. x. pl. 1000; Naum. Vög. Deutschl. xii. taf. 309; Gould, B. of Eur. v. pl. 368; Yarr. Brit. B. iii. p. 239; Kjærb. Orn. Dan. afb. xlix. fig. 2; Schl. Vog. Nederl. ii. pl. 315; Fritsch, Vög. Eur. taf. xlix. figs. 3, 5.

♂ *æstiv.* suprà fuscescenti-brunneus, obsoletè rufescente vermiculatim notatus, dorso postico et uropygio unicoloribus: tectricibus alarum cinerascenti-brunneis, margine carpali albo: remigibus plerumque albis nigricante terminatis, primariis extimis extùs nigricanti-brunneis, secundariis intimis brunneis sordidè viridi nitentibus: caudâ brunneâ: pileo toto et collo undique cum pectore summo saturatè castaneis: mento ipso albo: torque collari nigricanti-fusco: corpore reliquo subtùs albo, hypochondriis et abdomine imo brunnescentibus, illis castaneo lavatis: subcaudalibus purè albis: subalaribus et axillaribus albis, plumis carpalibus cinerascentibus: rostro et pedibus saturatè plumbeis: iride albâ.

♀ *æstiv.* mari similis, sed ubique sordidior: interscapulio et pectore ochrascenti-rufo lavatis: torque collari indistincto.

Ptil. hiem. ut in ptilosi æstivâ colorata, sed omninò sordidior, magis obscurata: ventris albedine fulvescentiore, brunneo variâ: hypochondriis sordidè brunneis, haud rufescente lavatis: pectore fulvescente obscurato.

Adult Male (Volga, April). Entire head, neck, and breast, excepting a small white spot at the base of the under mandible, rich chestnut-red; round the lower portion of the neck the feathers are much darker, and form a dark blackish-brown ring; back, scapulars, rump, and upper tail-coverts blackish brown,

becoming darker on the rump; tail blackish brown; upper wing-coverts same as the back; quills dark brown on the outer web, the inner web white, broadly tipped with brown, and the inner primaries having white on the outer web; the secondaries also white, broadly tipped with black, and finally narrowly tipped with white, forming a conspicuous alar bar, the innermost secondaries, or dorsal quills, glossy black, with a green tinge; lower part of the breast and abdomen white, the lower part of the latter and the vent fulvous; flanks reddish brown, the feathers being slightly tipped with grey; under wing-coverts grey, broadly tipped with white; the feathers on the edge of the carpus white; under tail-coverts white; beak and legs dark lead-colour; iris white. Total length 13·5 inches, culmen 1·6, wing 6·8, tail 2·3, tarsus 0·9.

Adult Female. Differs from the male in having the colours more obscure, the feathers on the back and breast having lighter tips, and the abdomen being marked with brown, and not pure white, as in the male.

Male, winter (14th January). Differs from the spring-plumaged bird in having the chestnut-red portions much obscured, the feathers on the fore part of the breast having white edgings; the underparts, which in the spring plumage are pure white, are now dirty white, closely marked with brown.

Female, winter (February). Resembles the male, but is much duller in colour, the entire underparts being dark fulvous, marked with grey, the feathers on the centre of the abdomen having white tips.

The range of the present species extends throughout Central and Southern Europe, into Northern Africa, westward to the Canaries, and eastward into India. It has, however, not been recorded as found in Siberia by any of the Russian travellers. In Great Britain it is a spring visitant, occurring usually in the eastern counties. Mr. Gray gives but one instance of its having been met with in Scotland, a specimen having been shot near Musselburgh in 1855; and it has not been recorded as having occurred in Ireland. It has not yet been met with in Sweden, Norway, or Finland; but in Russia, Mr. Sabanäeff writes to us that it is annually found, during migration, in the Government of Moscow, though never in any numbers, and it is said to breed in the districts of Kalinkin; he also observed it in the Government of Jaroslaf. According to Bogdanoff, it is found in the Government of Kazan during the summer months; and Kessler records it as one of the commonest species in the districts of Kieff. It is met with in the Ural in the spring, and is said by Sabanäeff to breed on the Kaslin lakes, being also found in Tagila. In Poland, as we are informed by Dr. L. Taczanowski, it is a very common species, arriving in April and remaining until driven away by the ice; but even then stragglers stay till midwinter. In north-eastern Germany, according to Borggreve, it occurs during the breeding-season in Posen, Lausitz, Lower Silesia, Pomerania, and Prussia, leaving for the south again on the approach of winter. Dr. E. Rey writes to us that he has observed it on the "Salzigen See," in the spring up to the month of May, but it does not breed there.

It ranges during the summer season as far north as Denmark, and is said by Kjærbölling to breed there. Mr. E. Hage procured it from Slesvig. Mecklenburg states that it breeds at Bothkamp, in Holstein; and Boje writes that it also breeds, not uncommonly, at Damme, in that Duchy. In Holland and Belgium it is generally to be found, according to Baron von Droste Hülshoff, not uncommonly on the mainland of East Friesland, especially on the high moors, and will certainly be found breeding in the peat bogs. In July 1861 a flock appeared on

Borkum, and remained about a fortnight. It is occasionally found in Luxembourg; and Baron De Selys-Longchamps writes that it passes through Belgium in the spring, but its occurrences are irregular. According to M. de Meezemaker it has once bred near Dunkerque. Degland and Gerbe state that it occurs regularly in the northern departments of France in spring and autumn, is accidental in those of the east and west, and passes regularly through the southern departments. In Southern Spain, Major Irby informs us, "this species, in common with the Marbled Duck and the Garganey, may be considered a summer Duck, and is the most abundant of the three. They nest in the end of April in the Marisma, where I have shot them on the 1st of May, and once killed one as late as the 6th of December at Casa Viega, the only one I saw so late in the season;" and Lord Lilford writes to us that "we met with this bird in small numbers in the Cotos del Rey and de Doñana, in Andalucia, in the spring of 1869 and 1872. In May of this year (1872) in the latter locality I found small parties of from three to seven on almost every little lake or tarn. It is a Duck that loves shelter, and is seldom seen far out on the open water, therefore all the easier to shoot. We obtained a nest of nine eggs, from which I shot the female bird; the nest was at a short distance from the water, amongst high rushes, and was composed of dead dry water-plants, flags, &c., and lined with thick brownish white down and a few white feathers. The people of the Coto de Doñana called this Duck 'Negrete,' and told me that it generally appeared there about the end of February, and disappeared in the autumn, or, as they said, 'before the rains,' *i. e.* about the end of September, but that occasionally a solitary individual was met with in winter."

It occurs in Savoy during migration—and, according to Salvadori, winters in Italy, but does not seem to remain there to breed. Mr. C. A. Wright states that it occurs rarely in Malta in the winter; in the Ionian Islands, however, it is a summer visitant, and comparatively rare in the winter season. Lord Lilford writes that it "arrives generally in March in small numbers, and breeds in Epirus and Albania. Occasionally seen in winter, but far from common at that season." Mr. W. H. Hudleston observed it in Western Greece, and thinks that a few remain there to breed. During the breeding-season it is to be met with in many parts of Southern Germany, Hungary, and the Danubian Principalities. Dresser observed them on the islands on the southern Danube at the commencement of the nesting-season in large numbers, and was told that many breed there. Mr. Robson writes to us from Constantinople that it arrives in Asiatic and European Turkey in the autumn, and remains there over the winter; large numbers are shot during the spring migration in March, when they are on their way northward; for, Mr. Robson informs us, none appear ever to remain there to breed. In Southern Russia and on the shores of the Black Sea it is a common species, and is said to breed numerously on the Lower Volga. Asia Minor is a country where this Duck winters; and it is also to be met with during that season in suitable localities in Northern Africa. Captain Shelley writes that "this Duck ranges throughout Egypt and Nubia, but is most plentiful on the large lakes of the Fayoom and Lower Egypt. On Birket el Korn I daily saw immense flocks of many thousands together far out on the centre of the lake, which, when disturbed, rose with a running flight, striking the water rapidly with their feet, and making a noise in so doing which could be distinctly heard at a couple of miles' distance."

According to Loche it is a common species in the three provinces of Algeria, and sedentary

on the large lakes, where it breeds amongst the rushes. Mr. Salvin observed it in the marsh of Zana, and writes that "this bird also breeds at Zana and Djendeli. We were more fortunate in obtaining their eggs than those of the other species of Ducks. The Widgeon (*Mareca penelope*) is not found in either place; or at least we never saw it; and so brilliant a bird as the cock could hardly have escaped observation; consequently the eggs from these districts may fairly be ascribed to this bird, as no other Duck in the country lays similar eggs." We are indebted to Major Irby for the following extract from Mr. Favier's manuscript notes:—"Found in abundance in Morocco, crossing to Europe in May, returning in November and December. Many, however, remain to nest, leaving with the return migration to winter probably in the interior of Africa. They are more abundant at Ras Dowra than near Tangier. They nest in June and July, the incubation lasting thirty days. The young are very difficult to rear, as they are so greedy as to eat any bright objects, such as pins &c., which of course kills them;" and Major Irby writes that he himself "found this Duck in hundreds at the lakes of Ras Dowra at the end of April, and shot some close to the tents 'at flight' in the evening at the same time as *Anas marmorata*; but they kept in separate flocks."

The most western limit of the range of this species appears to be the Canaries, where it is recorded as occurring occasionally during migration. To the eastward it goes as far as India, where it has been found during the winter season. Dr. Jerdon writes that it is "exceedingly common in Northern and Central India, less so in the south. It frequents both tanks and rivers, and prefers grassy tanks and wooded jheels and rivers. It appears to feed a good deal during the day, and is met with in large parties scattered among the grass or weeds, the birds often rising singly." Major Irby informs us that he found it common in Oudh during the winter, and considered it one of the best Ducks for the table. Mr. W. T. March (Proc. Phil. Ac. 1864, p. 72) states that it has occurred in Jamaica, but that it is very rare there. Professor Newton, however, thinks that there may have been a mistake in this statement.

We are indebted to Dr. L. Taczanowski, of Warsaw, for the following notes on the habits and nidification of this species in Poland:—"In the breeding-season it takes up its abode on the ponds, lakes, and submerged marshes, or on rivers which are not rapid, and where the banks are overgrown with herbage and bushes. It frequents both large and small sheets of water, even small ponds in the fields or amongst brushwood, if well concealed by bushes and herbage. It can easily be recognized on the wing, as it appears quite black above with a large white speculum on the wing. Its call resembles that of *Anas ferina*, but is not so loud. The female places her nest amongst the herbage on the very edge of even deep water, generally on a tussock, and sometimes in a bush two or three feet above the ground, always, however, carefully concealed. If any one approaches the nest she slips noiselessly off, and into the water, avoiding observation by diving. They lay seven to twelve eggs, usually yellowish, but sometimes grey or greenish. It dives excellently well; and if fired at and winged it tries to escape by swimming, but if it sees that it is pursued it dives and does not reappear. An old sportsman knows this, and gives it a second shot before it has time to get away. Their flesh is very good; and in the autumn, when they are fat, they do not taste fishy like many other Ducks, thus showing that they feed principally on vegetable food."

In Dresser's collection are eggs from Hungary and Prussia which in size vary from $1\frac{39}{40}$ by

$1\frac{19}{40}$ inch to $2\frac{4}{40}$ by $1\frac{21}{40}$ inch. In shape they resemble eggs of the Gadwall, but are greyish buff in colour. Dr. E. Rey sends us the measurements of eggs in his collection, which average 53·5 by 37·0, the largest measuring 55·25 by 37·5, and the smallest 51·0 by 35·5 millimetres respectively.

The specimens in spring plumage, figured and described, are in Dresser's collection, and were obtained from the Volga through Mr. Möschler; and those in winter plumage are specimens kindly lent to us by Mr. J. H. Gurney, jun., by whom they were purchased in the flesh in Cambridge and Leadenhall Markets.

In the preparation of the above article we have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂, *b*, ♀. Volga, April (*Möschler*).

E Mus. J. H. Gurney, jun.

a, b, c, d, e. Leadenhall Market. *f.* Cambridge Market (*J. H. G.*).

E Mus. G. E. Shelley.

a, b, c. Fayoom, March 1871.

E Mus. W. Schlüter.

a, b. South Russia, May 1870.

Genus CLANGULA.

Anas apud Linnæus, Syst. Nat. i. p. 199 (1766).
Clangula, Boie, Isis, 1822, p. 564.
Fuligula apud Bonaparte, Synop. p. 393 (1828).
Glaucion apud Kaup, Natürl. Syst. p. 53 (1829).
Bucephala apud Baird, B. of N. Am. p. 795 (1858).

In this genus only three species are included, all of which are found in the Western Palæarctic Region, two being resident, and the third only a rare straggler from the Nearctic Region. They are, as a rule, marine species, except during the breeding-season, when they are often found far inland. They swim well and buoyantly, except when alarmed, when they submerge their body so that only the back is visible above the surface; and they dive so rapidly that they will dive at the flash when fired at. They obtain their food chiefly under water, and are able to dive very deep and to remain for a long time below the surface. Their food consists of crustaceans, small water-insects, fish, and aquatic vegetable substances. Their flight is very rapid and direct, their stiff sharp wings producing a whistling sound as they pass rapidly through the air.

They breed in holes in trees—except *Clangula islandica*, which breeds where there are no trees, and makes use of holes in walls or heaps of stones. The eggs, which are numerous, are deposited on a bed of down at the bottom of the hole, and are dull greenish-grey in colour, and rather glossy and smooth in texture of shell.

Clangula glaucion, the type of the genus, has the bill shorter than the head, higher than broad at the base, depressed towards the tip, which is rounded and not broader than the base; unguis large, broadly elliptical, decurved at the tip; nostrils large, oblong, placed in the anterior part of the nasal sinus; upper mandible much overlapping the lower one, concealing the ends of the lamellæ; trachea enlarged about the middle, having at the lower end a large bony membranous dilatation; wings moderately long, pointed, the first quill longest; tail rather long, rounded; legs short, placed far aft; tarsus anteriorly scutellate; hind toe slender, broadly lobed; anterior toes long; interdigital membranes full; claws moderate, rather obtuse, that on the middle toe curved outwards, internally expanded and rounded.



J G Keulemans Lith

Hayhurst imp

BUFFEL-HEADED DUCK.
CLANGULA ALBEOLA.

CLANGULA ALBEOLA.

(BUFFEL-HEADED DUCK.)

The Little Black-and-White Duck, Edw. Nat. Hist. Birds, ii. p. 100, pl. 100 (1747).
Anas hyberna, Briss. Orn. vi. p. 349 (1760).
Anas querquedula ludoviciana, Briss. Orn. vi. p. 461, pl. xli. fig. 1 (1760).
Anas querquedula carolinensis, Briss. Orn. vi. p. 464 (1760).
Anas albeola, Linn. Syst. Nat. i. p. 199 (1766, ex Edw.).
Anas bucephala, Linn. Syst. Nat. i. p. 200 (1766).
Anas rustica, Linn. Syst. Nat. i. p. 201 (1766).
La Sarcelle blanche et noire ou la Religieuse, Buff. Hist. Nat. Ois. ix. p. 284 (1783).
La Sarcelle de la Caroline, Buff. Hist. Nat. Ois. ix. p. 286 (1783).
Clangula albeola (Linn.), Steph. in Shaw's Gen. Zool. xii. pt. ii. p. 184 (1824).
Fuligula albeola (Linn.), Bp. Synops. p. 394 (1828).
Bucephala albeola (Linn.), Baird, B. of N. Am. p. 797 (1858).

Figuræ notabiles.

Edwards, Nat. Hist. B. pl. 100; D'Aubenton, Pl. Enl. 948; Audub. B. of Am. pl. 408; Wilson, Am. Orn. pl. 62. figs. 2, 3.

♂ *ad.* capitis lateribus pone oculos et nuchâ albis: capite reliquo nitidè nigro, fronte, loris et mento purpureo et parte reliquâ viridi nitentibus: dorso centraliter, scapularibus et secundariis intimis velutino-nigris: remigibus primariis nigris, secundariis extùs albis: tectricibus alarum minoribus nigris albo marginatis, reliquis albis: supracaudalibus pallidè cinereis, caudâ cinereâ: corpore reliquo suprà et toto subtùs albo, abdomine centraliter cinereo notato: rostro saturatè plumbeo, pedibus flavicantibus: iride nigro-fuscâ.

♀ *ad.* capite, collo et corpore suprà nigro-fuscis: capite plagâ magnâ utrinque albâ: scapularibus, tectricibus alarum et supracaudalibus cinereo lavatis: alis nigro-fuscis, secundariis extùs albis: caudâ nigro-fuscâ cinereo tinctâ: corpore subtùs albo, hypochondriis cinereo lavatis.

Adult Male (New Brunswick, December). Entire head and upper neck (except a broad white band which covers the sides of the head behind the eye and passes round the nape) glossy black, the feathers elongated, the fore part of the crown, the lores, and the chin richly glossed with purple, the remaining portion with bottle-green; centre of the back, scapulars, and inner secondaries deep velvety black, except some of the outermost scapulars, which are white edged with black; primaries black; the short secondaries white on the outer and blackish on the inner web; feathers along the edge of the wing black edged with white; central and larger wing-coverts, fore part of the back, lower neck and under-parts white; upper tail-coverts whitish grey; tail grey; centre of the abdomen marked with grey; bill blackish plumbeous; legs and feet yellowish; iris deep brown. Total length about 13·5 inches, culmen 1·45, gape 1·55, wing 6·7, tail 2·9, tarsus 1·3.

Adult Female (Missouri, 30th May). Head, neck, and upper parts generally blackish brown; a large white patch on each side of the head; scapulars, wing-coverts, and upper tail-coverts marked with grey; wings blackish brown, the short secondaries externally white, forming a white band across the wing; tail dark brown with a greyish tinge; underparts white, the flanks tinged with ashy grey.

The Buffel-headed Duck (or Dipper, as the New-Brunswick shore-gunners used to call it) is a Nearctic species only very rarely occurring within the limits of the Palæarctic Region. Yarrell cited two instances of its occurrence in Great Britain:—one that of a male shot near Yarmouth in the winter of 1830, formerly in the collection of Mr. Miller, but now in that of Mr. Rising, of Horsey; and one of a specimen in the Margate Museum, said to have been obtained in Orkney: but this latter specimen proved subsequently to have been obtained from America by Mr. Dunn. One was obtained at West Mud, near Devonport, in the winter of 1841, and is now in the collection of the Rev. W. Hore, of Barnstaple, where Mr. Harting examined it in September 1870. In the British Museum there is a specimen labelled "Norfolk;" but there is nothing to show that it is really a British example. Mr. Cordeaux states (B. of Humber Distr. p. 176) that "a mature male was shot in the winter of 1864–65 on the Bessingby beck, close to the town of Bridlington, by Richard Morris," and was in the possession of Mr. Machin, whence it has passed into the collection of Mr. J. Whitaker; and Mr. Robert Gray writes (B. of W. of Scotl. p. 396) that Mr. Angus showed him a fine male which was shot on the Loch of Loriston, Aberdeenshire, in January 1865, and a few days later Mr. Edwards, of Banff, showed him a specimen, also a male, which had been shot many years previously in the Loch of Strathbeg, and placed in the Banff Museum by the late Mr. Smith, minister of Monquhitter. So far as I can ascertain, it has never occurred elsewhere in Europe than in the British Isles. In America it is found throughout British North America and the United States as far south as Mexico; and it has been once recorded from Greenland by Professor Reinhardt, who says that in about the year 1830 an adult female was obtained at Godthaab. In the Hudson's-Bay Territory it is said to be common; and I have seen it numerous during the winter season on the coasts of New Brunswick. Dr. T. M. Brewer, writing to me respecting its occurrence in the United States, says:—"This species is found throughout North America, from Greenland on the north-east to Alaska on the west, and in winter extends its range to the most southern States, the West Indies, and to both coasts of Mexico. It is an Arctic resident during the breeding-season, but few ever remaining to breed within the limits of the United States, and then only in the northern districts. In the valley of the Mackenzie it is very abundant to the mouth of that river, and is found everywhere, on all the rivers and lakes, in the interior of the continent. Mr. Dall found it not uncommon at the mouth of the Yukon river, in Alaska, and believes that it breeds there, though there are no trees but scrubby willows and alders. Mr. Bischoff obtained it at Sitka; and in California it remains from October until the last of April, and is very abundant, occurring from 49° N. lat. to San Diego, frequenting both salt and fresh water, and becoming so very fat as to be known as the 'Butter-ball.' It feeds more readily in deep water than most Ducks; and its food consists almost invariably of small fish, and its flesh has therefore almost always a strong fishy flavour. Dr. Gundlach informs me that this Duck is a regular winter visitant to Cuba." To this I may add that Wedderburn records it as occurring in Bermuda; and when at Matamoras, in Mexico, I was

assured that it was found at the Boca del Rio Grande in winter, and I received the skin of a drake from Fort Stockton, in Texas.

The present species is by no means shy in its habits; and during the two seasons I spent on the shores of New Brunswick I had ample opportunities of watching it, and shot quite a number of specimens. Usually they were seen in small flocks of from four to a dozen individuals, seldom in large parties or singly; and the best places to find them were small quiet coves or sheltered spots close inshore. Though not shy, still the Dipper (as the fishermen and gunners in New Brunswick call this Duck) is perfectly well able to take care of itself, and is well aware of the range of an ordinary fowling-piece. I carried a light gun, with which, by using a wire cartridge, I could kill at very long distances; and this evidently puzzled them at first; but they soon seemed to make ample allowance by keeping further out. The rapidity with which this Duck can dive is astonishing; and unless one is used to firing at them, one can seldom kill them. The Indians believe that they bear a charmed life, and call them the "Spirit Duck;" and I can well believe that it is next to impossible to kill them with a flint-gun or an arrow; but with a percussion-gun I found no difficulty in so doing. My usual mode was to stalk them when they were diving within range of the shore; and when all the flock were under water I would run close to the edge and, watching keenly, would fire the moment the water broke as they reappeared—and generally got two or three, often astonishing them so much that they would fly off instead of diving and thus give me another chance. I well recollect astonishing a lot of these and other Ducks, and myself also, in a manner I little expected. One bitter cold day, when the frost was so intense that the receding tide left the rocks covered with a hard glassy coating of ice, I was walking along the top of the rocks overhanging the Bay of Fundy. Seeing some Ducks rather close inshore some distance ahead, I walked round to the place and crawled cautiously to the edge of the rock to see where they were. I had got to the very edge when I discovered them right under me; and as I tried to get back unobserved I put my foot on a piece of ice, and in a second went over into the water amongst the Ducks, scaring them worse than I myself was scared. Fortunately I kept hold of my gun, and, though the sea was by no means smooth, I swam round and was soon out. But I shall never forget my walk to the nearest pilot's house, a distance of about two miles; for before I had gone far my clothes froze, and when I arrived there I felt as if in a suit of case-armour. It was no easy task to divest myself of my garments; but after being well-rubbed down and treated to a good strong dose of that universal sportsman's remedy, whisky, I was as right as ever, and went out for another turn in the afternoon.

During the entire winter, even in the coldest weather, I used to find this Duck common on the shores of the Bay of Fundy; and certainly the male is one of the handsomest and most elegant of the marine Ducks. When swimming it looks very round, the feathers being rather puffed out, the neck drawn in, and the long feathers on the head puffed out till the head looked like a richly coloured puff-ball. I have never had an opportunity of watching them during the breeding-season; for at the approach of spring they disappeared; and I never knew of any remaining there to breed, though, as Dr. Brewer below states, it is said to breed in New Brunswick. On the wing this bird is swift, and its flight is direct; but, as a rule, they were generally seen on the water, and trusted for security more to their extreme facility in diving than to their wings. I never recollect to have heard them utter any note, except one somewhat resembling that of the

Golden-eye, but softer. The flesh of this bird is fishy and unpalatable. I have eaten it on several occasions, but, I need scarcely say, only when I could get nothing better, though the fishermen's wives used to prepare them in such a way as to make as dainty a dish as could be made out of them.

I am indebted to Mr. Arthur C. Stark, one of the best field-naturalists and observers I have ever known, for an opportunity of examining undoubted specimens of the eggs of this Duck, and also for the following notes, viz.:—"When travelling up the Mississippi river, above St. Paul, Minnesota, towards the end of April 1872, we noticed numerous flocks of Buffel-headed Ducks on most of the small lakes between St. Paul and St. Cloud. At this season the ground was still frozen hard, and the larger lakes were partially covered with ice. On leaving St. Cloud we struck north-west, and I lost sight of these Ducks until the end of May. We were then camped by a lake near Fort Pomme de Terre, in West Minnesota, on which were several male Buffel-heads. This lake was separated from a large alkaline lake by a ridge partly covered with a thick growth of oak trees. On the 27th of May, whilst looking for nests of *Tinnunculus sparverius*, my brother saw a small Duck fly from what appeared to be a Woodpecker's hole, about twenty feet from the ground, in an oak tree. Three days later I went with him to the spot; and on knocking the tree a Duck struggled out of the hole, dropped straight down to within a foot of the ground, and then flew off into the thickest part of the wood, dodging between the close-growing trees with astonishing rapidity, until stopped by a lucky snap shot. On climbing to the hole from which the Duck had come I found it communicated with a good-sized hollow, near the extremity of a broken limb. On the opposite side was another entrance; but both were quite small, not exceeding three inches in diameter. The one from which we saw the Duck fly was evidently the work of a Woodpecker, probably *Colaptes auratus*. The hollow was only a few inches deep, and was partly filled with decayed wood. On this lay eight eggs nearly buried in down. At the time I did not know that *Clangula albeola* was a nester in trees, and, never having killed the female of this Duck before, was rather puzzled as to what nest we had obtained. On referring to Baird's 'Birds of America' some time after, I found that it was that of a veritable Buffel-head. The stomach of this Duck was completely crammed with small red worms."

Mr. Stark has kindly sent me the bird, eggs, and down for examination, the first of which I have figured. The down is soft in texture and greyish white in colour; and the eggs, which are about the size of those of the common Teal, are creamy white with a greyish olivaceous tinge, and show a pale greenish tinge when held up to the light. These eggs confirm the accuracy of the following notes respecting the eggs of this Duck, sent to me by Dr. T. M. Brewer, of Boston. "This Duck," he writes, "breeds in New Brunswick and Northern Maine, and also in Northern Wisconsin, Iowa, and Minnesota, though not so commonly as has been stated. Nearly all the eggs purporting to be of this species and doing duty as such in cabinets, really belong to the common Green-winged Teal. The presence of buffy white, and the absence of a shade of green when held to the light, will always detect the error. It probably breeds also in the high parts of Colorado; but of this I have as yet no positive evidence. It nests, whenever possible, in the hollow a of tree or stump. One found by Mr. Lockhart contained nine eggs, and was in a low rotten stump; another, in a tall poplar tree, twenty feet from the ground, contained ten eggs.

The nests are always lined with down, and usually with nothing else. The eggs, which vary considerably in size, are of a greyish ivory-white colour with a distinct tinge of green, which is much deeper in some than in others. They range in length from 1·95 to 2·05 inches, and in breadth from 1·35 to 1·50 inch."

The specimens figured are the adult male and female above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, *b*, *c*, ♂, *d*, ♀. Chance Harbour, New Brunswick, December 1861 (*H. E. D.*). *e*, ♀. Lakefield, Ontario, October 25th, 1873 (*C. B. Wharton*). *f*, ♀. British Columbia (*Elliot*). *g*, ♂. Sitka, March 1866 (*Bischoff*).

E Mus. A. C. Stark.

a, ♀. Lake Pomme de Terre, Missouri, May 30th (*A. C. S.*).



J.G.Keulemans del

Mintern Br[illegible]

CLANGULA GLAUCION.

GOLDENEYE

CLANGULA GLAUCION.

(GOLDEN-EYE.)

Anas glaucium, Briss. Orn. vi. p. 406, pl. 36 (1760).
Anas clangula, Linn. Syst. Nat. i. p. 201 (1766).
Anas glaucion, Linn. tom. cit. p. 201 (1766).
Anas peregrina, S. G. Gmel. Reise durch Russl. ii. p. 183, pl. 16 (1774).
Le Garrot, Buff. Hist. Nat. Ois. ix. p. 222 (1783).
?*Anas hyemalis*, Pall. Zoogr. Rosso-As. ii. p. 270 (1811).
Clangula, Flem. Phil. of Zool. ii. p. 260 (1822).
Clangula clangula (Linn.), Boie, Isis, 1822, p. 564.
Clangula chrysopthalmos, Steph. in Shaw's Gen. Zool. xii. ii. p. 182, pl. 56 (1824).
Fuligula clangula (L.), Bp. Syn. p. 393 (1828).
Clangula vulgaris, Flem. Brit. Anim. p. 120 (1828).
Glaucion, Kaup (*A. clangula*, L.), Natürl. Syst. p. 53 (1829).
Clangula leucomelas, C. L. Brehm, Vög. Deutschl. p. 927 (1831).
Clangula peregrina, C. L. Brehm, tom. cit. p. 929 (1831).
Clangula glaucion, C. L. Brehm, tom. cit. p. 929 (1831).
Clangula americana, Bp. Comp. List, p. 58 (1838).
Glaucion clangula (L.), Keys. & Blas. Wirbelth. Eur. p. 86 (1840).
Clangula chrysophthalma (Steph.), Macg. Hist. Brit. B. v. p. 174 (1852).
Bucephala americana (Bp.), Baird, B. N. Am. p. 796 (1858).
Bucephala clangula (L.), Coues, Key N. Am. B. p. 290 (1872).

Garrot, French; *Quatr' occhi*, Italian; *Schellente*, *Kobelente*, *Knobbe*, German; *Brileend*, Dutch; *Hvinand*, *Fiiröine*, Danish; *Hvinand*, *Skjærand*, Norwegian; *Knipa*, Swedish; *Sotka*, *Telkka*, Finnish; *Gogol*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 802; Werner, Atlas, *Palmipèdes*, pl. 56; Kjærb. Orn. Dan. taf. 48; Frisch, Vög. Deutschl. tafs. 181, 182; Fritsch, Vög. Eur. tafs. 181, 182; Naumann, Vög. Deutschl. taf. 316; Sundevall, Svensk. Fogl. pl. 62. figs. 4, 5; Gould, B. of Eur. pl. 379; id. B. of G. B. v. pl. 31; Schlegel, Vog. Nederl. pl. 311; Audub. B. of Am. pl. 406; Wilson, Am. Orn. pl. 67. fig. 6.

♂ *ad.* capite cum collo superiore nigris atro-viridi nitentibus, pilei et nuchæ plumis elongatis, pone sinum oris maculâ subrotundâ albâ: collo imo et corpore subtùs niveis: dorso, uropygio et tectricibus alarum minimis nigris: remigibus primariis et secundariis intimis nigris, secundariis reliquis et tectricibus

alarum mediis albis: scapularibus albis, extùs nigro marginatis: caudâ nigrâ griseo tinctâ: hypochondriis albis, nigro marginatis, crissi plumis albo et sordidè nigro variegatis: rostro nigro: iride et pedibus flavo-aurantiacis, membranâ natatoriâ sordidè nigricante, unguibus nigricantibus.

♀ *ad.* minor: capite et collo superiore saturatè rufescenti-fuscis: collo imo et dorso antico cinereis, plumis albido marginatis: dorso reliquo, scapularibus et tectricibus alarum minoribus nigro-fuscis cinereo tinctis: dorso postico et uropygio nigricantibus: remigibus primariis et secundariis intimis nigricantibus, reliquis albis: tectricibus alarum majoribus albis, nigro apicatis: corpore subtùs albo, hypochondriis fusco-cinereis: rostro nigro: iride et pedibus flavis.

Juv. matri fere similis.

Adult Male in winter. Head and upper neck black with bottle-green reflections, the feathers on the crown and nape elongated; a roundish patch at the base of the bill, below and in front of the eye, lower neck, and underparts white; back, rump, lesser wing-coverts, and edge of the wing velvety black; primaries and inner secondaries black, rest of the secondaries and centre of the wing pure white; scapulars white with broad black external margins; tail black with a greyish tinge; feathers on the lower flanks also edged with black, and those about the crissum varied white and dull black; beak black; iris yellow; feet orange-yellow, the webs dusky, and the claws brownish black. Total length about 18 inches, culmen 1·4, wing 8·8, tail 3·8, tarsus 1·55.

Adult Female (Christiania). Head and upper neck deep rich brown; lower neck and the sides of the fore part of the back deep slate-grey with rather lighter tips to the feathers; upper parts otherwise black with a greyish tinge; tail washed with grey; primaries and inner secondaries black with a faint brownish tinge, rest of the secondaries white; wing-coverts black, variegated with white; underparts white, the flanks greyish brown; bill blackish; iris and feet yellow. In some of the females the tip of the bill, except the nail, is yellow, but in most this is not the case. Culmen 1·35 inch, wing 7·7, tail 3·3, tarsus 1·42.

Young Male (near Archangel). Resembles the female above described, but has rather more white on the wings.

Nestling (Ural, 17th June). Crown, sides of the head, nape, and upper parts deep brown, marked with a white spot on each side by the wings, and one on each side of the rump; chin and upper throat white, lower throat greyish brown; rest of the underparts white, marked with greyish brown on each side of the anal portion; the entire body covered with close, short down.

Adult Male in summer plumage (*fide* Palmén, Finl. Fogl. ii. p. 469). Like almost all other Ducks the present species has a distinct summer plumage which is worn by the male only for a short time; and so difficult is it to obtain the bird in this dress that I have been obliged to translate the description given by Dr. Palmén of one shot at Haminanlaks by Mr. J. von Wright on the 10th September, 1847, as follows:—"Iris, legs, bill, wings, and tail as in the winter plumage; head and upper neck dark greyish brown with a yellowish tinge, there being only the slightest trace of the white spot at the base of the bill; rest of the neck and sides of the crop ashy grey with an ochreous tinge, especially on the neck; lesser wing-coverts ashy grey with an ochreous tinge, especially on the light edges; the feathers on the side of the crop are darker at the base, but some have whitish grey points from which a light streak along the shaft divides the dark coloration; fore part of the back and shoulders similarly coloured;

3

but the rounded hinder scapulars have light edges, and the foremost darker ones have whitish grey tips on the shafts which encroaches on the dark colour; both the scapulars and coverts have dark shafts; some of the upper tail-coverts have greyish white points tinged with yellowish; hinder part of the back and sides of the rump brownish with a yellowish grey tinge; entire underparts and larger wing-coverts pure white; innermost secondaries deep black, rounded at the tip." Dr. Palmén adds in a note that the old male in summer dress may be easily distinguished from the young birds and female by its pure white wing-coverts.

During the summer season the Golden-eye inhabits the northern portions of both the Nearctic and Palæarctic Regions, being circumpolar in its range; and at the approach of winter it migrates southward, and is at that season to be met with as far south as the northern shores of the African continent.

In Great Britain it is known only as a winter visitant, being tolerably numerous on our coasts during the coldest season of the year; but old males are seldom seen. Occasionally it is to be met with in the interior of our island, but less frequently than on the sea-coast. I find it recorded from various parts of the south coast of England. Mr. J. C. Mansel-Pleydell says that it never appears in large flocks off the coast of Dorset, but in groups of about a dozen; specimens are killed at Weymouth almost every year; and they are seen most winters in Kimmeridge Bay. Mr. Cecil Smith records it as of not unfrequent occurrence on the Somersetshire coast; and Lord Lilford, writing from Lilford, Northants, says, "One or two in immature plumage generally make their appearance on our river (the Nene) close to this house in October. We occasionally see a few during severe weather in December and January, and almost invariably one or two adult males in the latter end of February or the beginning of March, whatever may be the state of the weather at that period. I have never seen the Golden-eye here associate with other species, except in one instance, when a fine adult male kept company for some weeks with three Goosanders which visited us in the sharp frost of February 1871." Mr. Stevenson informs me that it is common on the coast of Norfolk, but, as elsewhere, chiefly in immature plumage. Occasionally young birds have been seen far inland, as at Earlham, near Norwich, consorting with freshwater fowl; and, according to Mr. Lubbock, a pair have been known to remain as late as the 12th May. According to Mr. Cordeaux (B. of Humber Dist. p. 175), except in unusually severe seasons, it can scarcely be considered a common bird in the Humber, where small parties are met with each season, arriving about the middle of October, and leaving late in March or early in April. In Scotland, Mr. Robert Gray states (B. of W. of Scotland, p. 395), it is "commonly distributed over the whole of the west, being a regular winter visitant to all the sea-lochs of the mainland, from Wigtownshire to Cape Wrath, and also the sounds and lakes of both groups of islands." On the east side of Scotland it is also common; and Mr. Gray says that it "probably breeds occasionally in Sutherlandshire, as specimens have been seen and obtained in that county as late as the end of May. Mr. A. G. More has stated (Ibis, 1865, p. 447) that a pair bred in the hollow of an old larch tree at Loch Assyn; the nest, with the young birds, was found by a shepherd. Macgillivray states that he has seen pairs on freshwater lochs in Harris in the beginning of May, and stray specimens sometimes linger in Benbecula and North Uist till about the same time." Dr. Saxby believes that it also breeds in Shetland;

for, he says, he has "seen a female and four young birds upon the loch of Belmont, from which locality eggs have been brought closely resembling the specimens figured by Mr. Hewitson."

Thompson speaks of it as being a regular winter visitant to the coast and inland waters of Ireland. He has not known it to arrive earlier than the 5th of October; but it remains late, occasionally until May, and in 1840 a couple were still frequenting Belfast Bay on the 1st of June.

In Greenland and Iceland it is replaced by *Clangula islandica*; but it occurs in the Færoes, though Mr. H. C. Müller states that it is very rare, and he only records one instance of its capture, on the 12th March, 1858. It is, however, numerous in Scandinavia, and, Mr. Collett informs me, is generally distributed in all parts of Norway from 58° to 71° N. lat.; and, as is the case with most of the diving Ducks, it breeds commonly in all the northern parts of that country on the rivers and lakes, but never on the sea-coast. In the southern districts it is scarcer, and during the summer is exclusively found on the high mountains, and, as a rule, never in the low-lands, except during passage. In winter it is met with in a few open parts in the interior and on the coast; but most of those which breed there migrate southward in the winter. Professor Nilsson says that it is found throughout Sweden, but more numerously in the north than in the southern districts, though it breeds as far south as Skåne. Its true habitat during the breeding-season is, he says, from 62° to 68° N. lat. Though most of those which breed in the north migrate southward in the late autumn, many are found during the coldest winters in Central and Southern Sweden, and near Stockholm it is found in tolerable numbers every winter. When at Gothenburg during a very severe winter some years ago, I found it the most numerous of the diving Ducks which were exposed for sale in the market, and was told that it is a very common winter resident. In Finland it breeds, as in Sweden, in considerable numbers, in the extreme north, and here and there throughout the country; but, according to Dr. Palmén, it arrives late in March or early in April, and leaves late in October or early in November, not remaining throughout the winter, being probably unable to find open water, except in mild winters.

It is common in the Archangel Government, in Northern Russia; but Mr. Sabanäeff says that it is somewhat rare in Central Russia, but breeds in tolerable numbers in the Jaroslaf and Kostroma Governments, and is numerous in the north and north-east of Russia. In the Ural he found it breeding in the Perm Government, but only saw it on the lakes in the steppes during passage.

According to Baron von Droste, it breeds here and there in Courland and Livonia, Pomerania, Prussia, and Mecklenburg, but not anywhere in Western Germany; and Borggreve writes that he "observed at least six pairs during the breeding-season on the Werbellin lake, near the Joachimsthal, in Mark Brandenburg, and found a nest, in which the female was incubating, in a hollow lime tree, about twenty feet above the ground. A friend of his gave a similar report from Stargard. Kjærbölling states that it is one of the commonest Ducks in Denmark during the winter, and that, according to Boje, it has been known to breed in Holstein; and in Holland it is only known as a winter visitant, and is also at that season of the year common on the island of Borkum, where, Baron von Droste says, it frequents the sea-coast. In Belgium and France it is common during the two seasons of passage, and is also met with in the winter; but

it is stated by Professor Barboza du Bocage to be rare in Portugal; and the same may be said respecting its occurrence in Spain; for Colonel Irby states that it "rarely occurs about the Straits of Gibraltar in winter."

It visits the mountain-lakes of Savoy every year in November and December, and likewise in spring on its passage northwards; and in Italy it is common during winter, though old males are rare. In Sicily it is not so abundant; and in Sardinia it is, Mr. A. B. Brooke writes (Ibis, 1873, p. 344), not very common; but he saw a few fine adult males near Cristano. Mr. C. A. Wright cites only one instance of its occurrence at Malta; but Lord Lilford says (Ibis, 1860, p. 354) that it is not uncommon in the Ionian islands during winter; and both Von der Mühle and Lindermayer speak of it as being a common winter visitant throughout Greece in suitable localities.

It is found here and there in Southern Germany during the cold season; Dr. Fritsch records it from Bohemia; and Mr. Seidensacher informed me that small flocks arrive in Styria in the autumn, and a few remain over the winter. Those which are obtained there are chiefly young birds. Messrs. Danford and Harvie-Brown speak of it as being met with not uncommonly on the larger lakes and rivers of Transylvania during winter; and Professor von Nordmann states that it is common on the Black Sea at that season. Dr. Krüper informs me that it is numerous off the coast of Turkey; but I have very meagre data respecting its occurrence off that of Asia Minor. Dr. Brehm states that it is met with in winter in the lagoons of the Nile delta; but Von Heuglin remarks that he never met with it anywhere in North-east Africa, nor does Captain Shelley include it in his work on the birds of Egypt. It is, however, met with in North-west Africa, being, Loche says, of very rare and accidental occurrence in Algeria in winter.

To the eastward it is found right across the continent of Asia. Mr. Blanford did not meet with it in Persia; nor does it appear to have ever straggled as far south as India; but Severtzoff speaks of it as being a rare winter visitant to Turkestan, and it is common in Northern Asia. Von Middendorff first observed it on the 23rd April near Amginsk; and it was, he says, common on the western side of the Stanowoj Mountains. In September he observed it on the south coast of the Sea of Ochotsk. Von Schrenk found it during the winter on the island of Saghalien; and Dr. Radde believes that a large number remain in Southern Siberia to breed. He saw five specimens in the Irkutsk market on the 12th June, and shot two young, not fully grown, birds on the Dwatschanda Lake on the 3rd August. The Golden-eye winters, he adds, on the Baikal Lake, where the Angara flows out; and specimens are brought to the Irkutsk market throughout the winter. It is found in Kamtschatka and across to the American continent. It is recorded by Messrs. Temminck and Schlegel as common in Japan; and Mr. Swinhoe says that he has obtained it in winter as far south as Amoy, and that it is common at Shanghai.

On the American continent the present species is numerous in the north during the breeding-season, and during the winter migrates at least as far south as Mexico. I found it common in winter in New Brunswick and Canada, where it also remains to breed; and it appears to be generally distributed in suitable localities in British North America. Mr. Dall, who obtained it at Nulato, in Alaska, in May, says that it always arrives early, and is common on the Yukon and on the sea-coast. Its eggs were obtained near Pastolik. In the winter season it is spread all

over the coasts of the United States. Dr. E. Coues records it from South Carolina; and Dr. Gundlach states that it has been observed in Cuba. According to Mr. George N. Lawrence (Mem. Bost. Soc. Nat. Hist. ii. p. 315), Colonel Grayson observed it at Mazatlan, in North-western Mexico; and he adds that it is "common in the winter months."

During the summer season, when at its breeding-haunts, the Golden-eye is said to be tolerably tame and unsuspicious, permitting itself to be approached within a short distance; and it frequently builds in the nest-boxes or hollow sections of trees hung up by the peasants, even when these are tolerably close to inhabited places. In the winter, however, it is a shy and wary bird, jealous of being approached, active and lively in its movements, and very swift on the wing. I have frequently met with small flocks of this species on the coast during winter, and found them shy and difficult of approach, though by watching them from cover and running down whilst they dived down in search of food, I could often get within range, and shot several. I always met with it in the sea, or else at the mouths of rivers, or in water near the coast; and it appears to obtain its food chiefly under the water, being a most expert diver, so much so that it will dive at the flash when fired at. Its flight is rapid, direct, and accompanied by a whistling sound produced by the rapid action of its small, stiff, sharp-pointed wings; and from this sound its name "Whistler" (by which it is known both on our coasts and on the other side of the Atlantic) is derived. When swimming, it carries the neck drawn in, the feathers on the head being somewhat puffed out. When undisturbed it sits rather lightly on the surface, but can, especially when alarmed, swim so low in the water that the back is only just shown above the surface. It usually seeks safety from pursuit either by swimming away or diving, and appears rather loth than otherwise to take wing. It feeds chiefly on small crustaceans and minute water-insects, small fish, and vegetable substances which grow in the water, and obtains its food chiefly by diving. Its flesh is so fishy that it is scarcely fit for food, however carefully it is prepared.

So far as my own experience goes, the Golden-eye always deposits its eggs in a hollow tree, at some height above the ground; but Naumann says that it frequently breeds in the reeds or rushes close to the edge of the water. In the north of Finland, in Sweden, and in Norway it nests in hollow trees, either near to or at some distance from the water, and very frequently in the nest-boxes which the peasants hang up for the waterfowl to breed in, and which are called by the Swedes "holkar," and by the Finns "pönttö." These are frequently hung up close to the peasants' huts; and even then the Golden-eye will nest in them. The bottom of the hollow tree or nest-box is neatly lined by the old bird with down; and on this soft bed the eggs, which vary in number from ten or twelve to seventeen or even nineteen, are deposited. When hatched the young birds are carried by the female in her beak down to the ground or to the water, one after another being taken down until the entire brood is taken in safety from the elevated nesting-place; and I have been assured by the peasants that this always takes place in the dead of the night. The eggs of this Duck are dull greyish green, uniform in tinge and rather glossy in texture of shell, oval in shape, and in size average about $2\frac{16}{40}$ by $1\frac{22}{40}$ inch; and the down with which the nest is lined is sooty greyish white, the tips of the down being rather darker than the central portion.

The specimens figured are the adult male and female, in winter plumage, above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Christiania, Norway, March 1871 (*R. Collett*). *b*, ♀ *ad.* Christiania. *c*, ♀ *juv.* Gudbrandsdalen, Norway, August 1869 (*R. C.*). *d*, ♀. Sjælland, Denmark, March 4th, 1870 (*A. Benzon*). *e*, ♂ *ad.* Uima, Archangel, April 23rd, 1874. *f*, *g*, ♂. Archangel, June 16th, 1874. *h*, ♀. Uima, Archangel, April 23rd, 1874. *i*, ♂ *juv.* Glinnie, Archangel, May 13th, 1874. *k*, *juv.* Archangel, July 15th, 1874 (*Piottuch*). *l*, *pull.* Ural, June 17th (*Sabanäeff*). *m*, ♂, *n*, ♀. Japan (*Swinhoe*). *o*, ♂ *ad.* Point Lepreaux, New Brunswick, March 8th, 1862 (*H. E. Dresser*).

E Mus. C. A. Wright.

a, ♀. Malta, December 9th, 1862 (*C. A. W.*).



W. Neale lith.

Hanhart imp

BARROW'S GOLDEN-EYE.
CLANGULA ISLANDICA

CLANGULA ISLANDICA.

(BARROW'S GOLDEN-EYE.)

Anas clangula, Briss. Orn. vi. p. 416, pl. xxxvii. fig. 2 (1760).
Iceland Duck, Lath. Synops. iii. p. 545. no. 83 (1785).
Anas islandica, Gmel. Syst. Nat. i. p. 541 (1788, ex Lath.).
Clangula barrovii, Swains. Faun. Bor. Am. p. 456 (1831).
Clangula scapularis, C. L. Brehm, Vög. Deutshl. p. 932 (1831).
Fuligula barrowii (Swains.), Nutt. Orn. U. S. and Canada, ii. p. 444 (1834).
Platypus barrowii (Sw.), Reinh. (senior) K. Dansk. Selsk. Naturvid. Afh. 1838, p. 103.
Anas barrowii (Swains.), Temm. Man. d'Orn. iv. p. 551 (1840).
Glaucion islandicum (Gm.), Keys. & Blas. Wirbelth. Eur. p. 86 (1840).
Clangula islandica (Gm.), Bp. Ucc. Eur. p. 74 (1842).
Bucephala islandica (Gm.), Baird, B. of N. Am. p. 796 (1858).
Fuligula islandica (Gm.), Schl. Mus. Pays-Bas, Anseres, p. 21 (1866).

Niakortok, *Kærtlutorpiarsuk*, Greenlandic; *Husönd*, Icelandic.

Figuræ notabiles.

Kjærb. Danm. Fugl. Suppl. taf. 8; Swains. Faun. Bor. Am. pl. 70; Gould, B. of Europe, pl. 380; Naumann, Vög. Deutschl. pl. 317.

♂ *ad. Clangulæ glaucioni* similis sed major, capite magis purpureo tincto, ante oculum plagâ magnâ semilunatâ albâ, scapularibus maculis amplioribus et magis rotundatis albis notatis, plagâ alari albâ striâ magnâ nigrâ segregatâ, rostro saturatè plumbeo, iride flavâ, pedibus sordidè flavidis.

♀ *ad. Clangulæ glaucioni* similis sed major, rostro robustiore et alis minus albo notatis.

Adult Male (Bay of Fundy, winter of 1866). Resembles *Clangula glaucion*, but is larger, the head is more fully crested, and the gloss on the head is purplish, varying in some lights to bottle-green with a purplish tinge; between the eye and the bill is an irregular crescentic white patch; rest of the plumage as in *Clangula glaucion*; but the white markings on the scapulars are broader and rounder, and the white on the wing consists of two smaller patches divided by a broad black band; bill dark plumbeous; iris rich yellow; legs yellow. Total length about 20 inches, culmen 1·5, wing 9·2, tail 4·0, tarsus 1·6.

Young Male (Valencia, Spain, December). Resembles *Clangula glaucion*, but may be distinguished by larger size, a larger and higher bill, and less white on the wings.

Obs. I do not enter into details respecting the various stages of plumage through which this species passes, as they assimilate so closely to those of *Clangula glaucion*. Birds in immature dress and old females are at the first glance difficult to distinguish; but the larger size and stouter and higher bill of *Clangula islandica* is generally an unfailing guide for distinction.

The range of this Duck is much more restricted than is that of its ally the common Golden-eye: it is found only in the northern portions of the Palæarctic and Nearctic Regions, not migrating far south in the winter; for even in Iceland it is a resident species throughout the year. It has not been known to occur on the shores of Great Britain, but is resident in Greenland and Iceland. Holböll says that in Greenland it is almost restricted to the Bay of Godthaab, its range being between 63° 45′ and 64° 30′ N. lat., and outside this the natives do not know it at all; and he adds that Mr. Jorgensen, a missionary who lived several years at Julianehaab, records it as breeding between Nenortalik and Sydpróven. In Iceland this Duck is tolerably common and resident. Faber, who did not recognize the distinctions between this species and *Clangula glaucion*, says (Prodr. Isl. Orn. p. 70) that it is rarer in the south than in the north of Iceland. It arrives about the middle of March at its breeding-places, which are near fresh water; and numbers breed at Myvatn, often using the earth huts, built for the sheep, for a nesting-place; hence it is called by the natives Husönd (House-Duck). Late in May it lays twelve or fourteen eggs, light green in colour, and about as large as those of the Scaup. When the male and female fly together in the pairing-season, one utters a loud quacking *ga-ga-ga-ga-gaarr*, which is answered with a harsh note by the other. Early in September Faber saw them at Myvatn with young not fully feathered. About the end of November they resort to the sea; and though some migrate, yet not a few are to be met with throughout the winter, especially in the narrow bays in the north of Iceland and at the warm waters. The male, he adds, only attains its full plumage in the third year. Dr. Krüper writes (Naumannia, 1857, i. p. 42) that its range is very restricted in Iceland, and it is chiefly met with on Myvatn. Elsewhere he observed it on the Laxá, near Geirastadr, Hamar (where he took eggs on the 14th June), and at the waterfall on the Laxá, about a mile south of Laxamyri. It is to be met with on the Myvatn throughout the year; and in the winter it takes refuge in the portion between Reykjahlid and Vogar, where there are warm springs and the lake never freezes. It does not appear to have occurred in the Færoes, and is very rare in Scandinavia. Mr. R. Collett says that he only knows of two occurrences of this Duck in Norway, on both occasions in East Finmark, where Nordvi believes that it is more often met with. One, an old male, was shot at Nyborg in 1848, and was in company with Golden-eyes; and a young male was obtained at Vardö in September 1851, when in company with several others. I do not find it recorded from the Swedish, Finnish, or North-Russian coasts; and Borggreve says that there does not appear to be any undoubted record of its occurrence on the coasts of North Germany. Baron Fallon states that it appears accidentally only on the coasts of Belgium, but does not cite any instance of a specimen having been obtained there; and I do not find it recorded from Holland, France, or Portugal; but that it does straggle further south than these countries appears certain from the fact that I possess a young male which was obtained near Valencia, in Southern Spain, by a collector of Mr. Howard Saunders.

On the American continent the present species is found both on the Atlantic and Pacific coasts. It appears to be tolerably common in Hudson's Bay and off the coasts of Labrador; and I found it by no means very rare in the Bay of Fundy during the winter season, though far less numerous than the common Golden-eye. It has also been met with, Dr. Coues says, as far south as New York; and in Western America it was procured by Mr. W. Henshaw at Utah,

and probably breeds in the Rocky Mountains. It occurs in Alaska; Mr. Dall says that it was obtained by Bischoff at Sitka, and rarely on the Yukon.

In habits the present species is said to resemble the common Golden-eye; but it is not so good a diver as that bird. Holböll says that it cannot dive in deeper water than the Harlequin, and is generally seen on the fjords. In Greenland, where this gentleman met with it, it is, he adds, the most wary of all the waterfowl, and it is with the greatest difficulty that one can approach within gunshot-range of it; his collectors only obtained specimens by concealing themselves near where it feeds, on nights when the moon gives light enough to see to shoot. In the spring it appears in pairs, and flies so high that it is seldom shot.

Like the Golden-eye it breeds in holes, though not in trees (for there are no forests in Iceland), but amongst the stones or in holes in the walls of houses. Dr. Krüper says (Naumannia, 1857, i. p. 40) that it is common at Myvatn, in Iceland, and breeds on almost all the islands, making use of the holes amongst the volcanic débris; and he also found a nest in a hole in a house. It commences breeding in May or early in June; and eggs may be found until the middle of July. The nest cannot be mistaken for that of any other Duck, as the down with which the nest is lined is pure white. The female sits very close, and may usually be captured on the nest. The eggs, from nine to twelve in number, resemble those of the common Golden-eye, but are larger, those in my collection averaging $2\frac{1}{40}$ by $1\frac{3}{40}$ inch in size.

The specimens figured are an adult male from the Bay of Fundy and an adult female from Iceland, both of which are in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂, *b*, ♀. Iceland (*Proctor*). *c*, ♂ *ad.* Bay of Fundy, winter of 1866 (*G. A. Boardman*). *d*, ♂ *juv.* Catalá, Valencia, Spain, December 22nd, 1871 (*H. Saunders*).

E Mus. Brit. Reg.

a, *b*. Iceland.

Genus COSMONETTA.

Anas apud Linnæus, Syst. Nat. i. p. 204 (1766).
Clangula apud Fleming, Phil. of Zool. ii. p. 260 (1822).
Clangula apud Boie, Isis, 1822, p. 564.
Platypus apud C. L. Brehm, Lehrb. eur. Vög. ii. p. 845 (1824).
Histrionicus apud Lesson, Man. d'Orn. ii. p. 415 (1828).
Cosmonetta, Kaup, Natürl. Syst. p. 196 (1829).
Fuligula apud Nuttall, Man. Orn. U. S. ii. p. 448 (1834).
Harelda apud Keyserling & Blasius, Wirbelth. Eur. p. 87 (1840).
Phylaconetta apud Brandt, Mém. Ac. St. Pétersb. vi. p. 9 (1849).
Bucephala apud G. R. Gray, Hand-l. of B. iii. p. 87 (1871).

The only species belonging to this genus is the Harlequin Duck, a richly coloured bird, which inhabits the northern portions of both the Old and the New World. Full particulars respecting its habits and nidification being given in the following article, I will not recapitulate them here.

Cosmonetta histrionica (being the only species belonging to the genus, and consequently the type) has the bill rather small, much shorter than the head, much higher than broad at the base, gradually depressed and narrowing towards the tip; unguis large and convex; lamellæ but slightly elevated, the ends not projecting; nostrils oblong, median; wings short, pointed, the first and second quills longest; tail moderate, much graduated, the central rectrices long and pointed; legs short, placed far behind, tarsus anteriorly scutellate; hind toe slender, with a large lobe, anterior toes moderate; claws small, rather blunt; plumage dense, soft; the males richly coloured.



HARLEQUIN DUCK.

HISTRIONICUS TORQUATUS.

COSMONETTA HISTRIONICA.

(HARLEQUIN DUCK.)

The Dusky and Spotted Duck, Edw. Nat. Hist. Birds, ii. p. 99, pl. 99 (1747).
The Little Brown-and-white Duck, Edw. op. cit. iii. p. 157, pl. 157 (1750).
Anas torquata ex insula Terræ-novæ, Briss. Orn. vi. p. 362 (1760).
Anas querquedula freti Hudsonis, Briss. Orn. vi. p. 469 (1760).
Anas histrionica, Linn. Syst. Nat. i. p. 204 (1766).
Anas minuta, Linn. Syst. Nat. i. p. 204 (1766).
Le canard à collier de Terre-neuve, Buff. Hist. Nat. Ois. ix. p. 250 (1783).
Le canard brun, Buff. Hist. Nat. Ois. ix. p. 252 (1783).
La Sarcelle brune et blanche, Buff. Hist. Nat. Ois. ix. p. 287 (1783).
Clangula histrionica (L.), Boie, Isis, 1822, p. 564.
Platypus minutus (L.), C. L. Brehm, Lehrb. Eur. Vög. ii. p. 845 (1824).
Platypus histrionicus (L.), C. L. Brehm, tom. cit. p. 848 (1824).
Histrionicus, Less. (*Anas histrionica*, L.) Man. d'Orn. ii. p. 415 (1828).
Cosmonessa et *Cosmenetta*, Kaup (*Anas histrionica*, L.), Natürliches System, pp. 46, 196 (1829).
Fuligula histrionica (L.), Nutt. Man. Orn. U. S. and Canada, ii. p. 448 (1834).
Harelda histrionica (L.), Keys. & Blas. Wirbelth. Eur. p. 87 (1840).
Phylaconetta histrionica (L.), Brandt, Mém. Ac. St. Pétersb. vi. p. 9 (1849).
Clangula torquata, C. L. Brehm, Vogelfang, p. 385 (1855).
Clangula histrionica (L.), C. L. Brehm, Vogelfang, p. 385 (1855).
Histrionicus torquatus (Brehm), Bp. Compt. Rend. xliii. p. 651 (1856).
Bucephala histrionica (L.), Gray, Hand-l. of B. iii. p. 87. no. 10700 (1871).

Canard histrion, French; *Kragenente*, *Harlekinente*, German; *Strömand*, Danish; *Tornauiarsuk*, Greenlandic; *Straumönd*, *Brimdufa*, Icelandic; *Strömand*, Swedish; *Tschernaja polossataja utka*, Russian.

Figuræ notabiles.

Edwards, Nat. Hist. B. pl. 99; D'Aubenton, Pl. Enl. 796. fig. 798; Werner, Atlas, *Palmipèdes*, pl. 59; Kjærb. Orn. Dan. taf. 54, Suppl.; Naumann, Vög. Deutschl. taf. 318; Sundevall, Svensk. Fogl. pl. 84. fig. 1; Gould, B. of Eur. pl. 380; id. B. of G. Brit. v. pl. 32; Audub. B. of Am. pl. 409; Wilson, Am. Orn. pl. 72. fig. 4.

♂ *ad.* pileo centraliter ad nucham nigro, in parte anticâ albo, et versus nucham ferrugineo marginato: genis albis: aurium maculâ albâ: capite et collo reliquo saturatè nigricanti-cæruleis, in parte imâ fere nigro: colli lateribus plagâ albâ notatis: pectore, dorso et tectricibus alarum minoribus saturatè et sordidè cæruleis: circa jugulum et latera colli fasciâ albâ, et pectore utrinque fasciâ semilunari albâ nigro mar-

ginatâ cincto: alis nigricantibus, secundariis intimis et scapularibus conspicuè albo notatis, et tectricibus alarum majoribus vix eodem colore notatis: speculo alari nigro-violaceo: uropygio nitidè nigro: caudâ sordidè nigrâ: corpore imo subtùs fusco, vix schistaceo-cæruleo tincto, hypochondriis ferrugineis: crisso nigro, maculâ albâ utrinque notato: rostro plumbeo: iride fuscâ: pedibus fuscis.

♀ *ad.* mari dissimilis, minor: corpore suprà fusco vix griseo-olivaceo tincto: fronte fusco-albidâ: gulâ, oculorum et aurium regione albidis: alis et caudâ nigris griseo tinctis: corpore subtùs fusco, pectore et abdomine conspicuè albo notatis, abdomine centraliter fere albido.

Adult Male in full plumage (Öfjord, Iceland, 1871). A broad stripe through the centre of the crown to the nape black margined with white; and from above the eye to the nape there is on each side a broad rusty-red stripe; on each side of the head, extending from the front of the eye to the base of the bill, and joining the white stripe on the crown, is a large white patch; rest of the head and neck deep (almost blackish) blue, becoming black on the lower portion, and marked on each side with two white patches, one a small spot on the auriculars and another a long stripe on the side of the neck; breast, back, and lesser wing-coverts deep dull blue; on the lower neck is a white collar nearly meeting in front and behind, and bordered with black; and another similar collar is just in front of the wing; wings blackish, the inner secondaries and scapulars conspicuously marked with white, and the larger coverts slightly marked with that colour; the outer web of the short secondaries richly glossed with purple, forming an alar speculum; rump glossy black; tail dull black; underparts below the breast brown with a blue-grey tinge, the flanks rich chestnut-red, and the crissum and under tail-coverts glossy black, on each side marked with a white spot; bill deep lead-blue, the nail lighter; iris dark brown; legs brown, the webs blackish. Total length about 15·5 inches, culmen 1·3, wing 8·0, tail 4·25, tarsus 1·4.

Adult Female (Öfjord). Upper parts generally dark brown with a greyish olivaceous tinge; forehead and feathers at the base of the bill light whitish brown; a white patch in front of the eye and another on the ear-coverts; wings and tail black with a greyish tinge; underparts lighter than the upper parts, the breast and abdomen closely spotted with white, these spots being almost confluent on the centre of the abdomen.

Young in down (*fide* Middendorff). Upper parts deep blackish brown; underparts white; cheeks and all the neck but a narrow line behind, white; crown and nape blackish brown; two spots on each side of the body, one on the wing and one on the thigh, white.

Obs. The young male in its first plumage closely resembles the old female above described, but has the upper parts darker; and between this and the full plumage of the adult male I have seen almost every gradation. The young female much resembles the old female, and differs from the young male in being somewhat smaller in size.

Though the present species inhabits the northern portions of both the Palæarctic and Nearctic Regions, it is much more numerous in America than it is in Europe and Asia; for it is, excepting in Iceland, a rare bird with us in Europe. In Great Britain it is only known as a rare straggler; and it seems that in several instances other species have been mistaken for it. It was first recorded as British by Montagu, who states that he examined two in the collection of Mr. Sowerby, which were killed on the estate of Lord Seaforth, in Scotland; and since then there have been many supposed occurrences, most of which, however, refer either to the young of the Long-tailed Duck or other species. Mr. Harting includes thirteen in his 'Handbook of

British Birds;' and, according to Mr. J. H. Gurney, jun. (Rambl. Nat. pp. 263–269), there have been altogether twenty-two recorded occurrences of the Harlequin in Great Britain; but after a careful investigation into all the data he could obtain respecting these several occurrences, he sums up by stating that "eight are clearly mistakes, and the rest are all doubtful except two, those being the original Lewes specimen and the recent Aberdeen one." I need not here recapitulate Mr. Gurney's reasons for doubting the authenticity of the various records of the occurrence of this species; but I may add that I fully agree with him that there are only two undoubted instances of specimens having been obtained in Great Britain. Mr. Robert Gray (B. of W. of Scotl. p. 394) states that he wrote to Major W. Ross-King respecting a specimen which he stated had been obtained in Aberdeenshire, and was informed that the bird was a male Harlequin, in very fine plumage, and was shot in 1858, and was apparently a solitary specimen.

It is tolerably common in Greenland, and has been observed on the east coast; Professor Newton says that it is most common between lat. 62° and 65° N., becoming rarer to the northward. In Iceland it is, according to Faber, a common resident, changing its quarters from north to south in winter, and frequenting the most rapid rivers, on the margins of which it generally breeds. There does not appear to be any undoubted instance of its occurrence in Norway; and Mr. Collett does not include it in his list of birds found in that country, but in a footnote he says that a couple are said to have been observed by Boie in the Trondhjemsfiord, in the spring of 1817; and Sommerfelt states that one is supposed to have been shot at Etne, in Hardanger, in the winter of 1838. Nilsson says that there is one in the old collection at Upsala, which was probably obtained on the Swedish coast; but he gives no other instance of its occurrence there. Dr. Palmén states that one was obtained in Western Södermanland in the spring of 1862; but there is no instance of its occurrence on the Baltic shores of Finland; and Borggreve expresses doubt as to whether it has ever been obtained on the coast of Germany. It is included by Kjærbölling in his work on the birds of Denmark; but no instance of its occurrence there is cited. Nor is there, so far as I can ascertain, any authentic instance of one having been obtained in France, though Messrs. Degland and Gerbe state that it has occurred accidentally in "Germany, England, and France." Elsewhere in Europe I find no record of its occurrence, except that the Ritter von Tschusi-Schmidhofen informs me that there is a male bird in the Bamberg Museum, which was shot in the Tyrol in 1852. I do not find it included in the list of birds occurring in North Russia, though it is stated to have been met with on the Caspian and the Sea of Aral.

In Asia it is rather more frequently met with than in Europe, and is found as far south as Lake Baikal. Von Middendorff states that from the 20th May it is tolerably common throughout the Stanowoi Mountains, and also on the south coast of the Sea of Ochotsk. In Mantchuria he shot it as late as the 27th October (O. S.). On the 23rd June he found young in down at Udskoj-Ostrog. Dr. Radde says that it is not rare on the south-western shores of Lake Baikal, especially between Kultuk Bay and the mouth of the Angara, and in 1857 he frequently saw it on the Ingoda between the 7th and 11th May, and in the autumn of the same year he found a few pairs in the Bureja Mountains. Von Schrenck states that he found it more numerous on the Upper than on the Lower Amoor, especially in places where the streams were very swift.

It is found in Japan; for I possess an immature male, obtained at Hakodadi in December 1864 by Mr. Whitely; but it does not appear to have been met with in China.

On the American continent it is tolerably common in the north during the summer, and migrates south to the coasts of the middle States in the winter. It occurs in the Aleutian Islands; and Dr. Brewer informs me that Mr. Elliott found it common on the Prybelow Islands throughout the year. Mr. Dall says that it was obtained at Kadiak and Sitka by Bischoff, but is rather rare in the vicinity of the Yukon. It is, he adds, an essentially solitary species, found (alone or in pairs) only in the most retired spots on the small rivers flowing into the Yukon, where it breeds, and not, except accidentally, on the main river. Dr. E. Coues says that it inhabits the northern districts, where it occurs chiefly on the coast. In the winter it ranges south to the middle States and California. It breeds, he adds, in the northern Rocky Mountains of the United States, and in August 1874 he found broods, still unable to fly, swimming in the clear streams which empty into Chief-Mountain Lake. Dr. Brewer informs me that, though once common in winter on the coasts of the United States, it has become very rare; and he adds that Audubon's claim to have found it breeding on Grand Menan, in the Bay of Fundy, is founded on a mistake; for he saw the gunner who had charge of the party in 1851 and 1852, and he told him that all the nests said to be those of the Harlequin were really those of the Red-breasted Merganser; and I may add that, though I found it by no means uncommon in the Bay of Fundy during the winter, I never saw one there at any other season of the year.

I have had no opportunity of watching the habits of the Harlequin Duck during the breeding-season; but when in New Brunswick in the winter I very frequently saw it, more especially in the spring, when vast numbers of Ducks were passing on their way to their breeding-haunts. Compared with the Long-tailed Ducks and Scoters, the Harlequin was a rather scarce bird; and, as a rule, I calculated their comparative numbers as about one to twenty. Usually the Harlequins were in twos and threes, or in small flocks, keeping near or consorting with Long-tailed Ducks; but on several occasions I have seen tolerably large flocks of Harlequins. Being much more shy than most of the other species of Ducks which frequented the Bay of Fundy, I found considerable difficulty in shooting them, and especially in obtaining old males; for, as a rule, I saw only about one fine-plumaged old male to eight or a dozen of the more plainly garbed females or young males; but one season I was tolerably fortunate in getting males, and obtained about a dozen in full plumage. I could only get within range by watching them from the shore as the tide rose, when they were diving in nearer and nearer as the tide flowed; and by watching my opportunity and taking a run towards the edge of the water as all the birds disappeared under its surface, and lying flat down before they reappeared, I could generally manage to get to the edge and obtain a shot, but usually at somewhat long range, and almost always found it necessary to use a wire cartridge. I had also a sort of hiding-place out on a point of rock jutting into the sea, which was covered at high tide, but where as the tide came up I used to sit and shoot at the small flocks of Ducks as they came flying past; but I rarely used to get a Harlequin there, as they usually passed too far from the shore, well out of shot-range. On the wing the present species was very swift and active; it is the only Duck I have known to dive from the air into the water at once on being fired at; and it is certainly one of the best divers amongst all the sea-Ducks. It is said by several observers to be a noisy bird:

but this does not coincide with my experience; for whereas the Long-tailed Ducks, by their incessant chatter, richly deserved the appellation of "old squaws," bestowed on them by the ungallant redskins, the Harlequins were, as a rule, rather silent than otherwise. On the water it swims swiftly and with great buoyancy, the male usually heading the small flock, and the females and young males following in the wake.

The food of the present species consists chiefly of small mollusks; and the stomachs of those I shot in the Bay of Fundy were filled with small univalves, large numbers of which were attached to the rocks, and were obtained by the birds by diving, frequently to a considerable depth below the surface. It is also said to feed on various sorts of marine insects, small fish, and water-plants; and Faber found in stomachs of examples examined by him, amongst other things, remains of *Nerita*, *Cancer pulex*, and water-plants. To the fishermen on the coast of New Brunswick, and to the Indians who frequent the Bay of Fundy to hunt after porpoise, the drake of this species is known by the name of "Lord" and the duck by that of "Lady." During the breeding-season the present species is stated to be found inland, where it frequents streams which flow swiftly, and more especially places where there are swift rapids, amongst which it swims and dives with ease.

Dr. Krüper, who found it breeding in Iceland, says that it is only found in certain localities, such as swift-flowing places in the rivers, almost always just below a fall or where the rivers flow into the lakes; and in these places it is always to be seen swimming against the stream and searching for food.

The nest of the Harlequin Duck is placed on the ground on the banks of a swift-flowing stream, and is so carefully concealed that it is extremely difficult to find. I have not found any careful description of the nest itself; but it is doubtless a depression scratched in the ground and lined with dried herbage and down of the bird itself. The number of eggs is said to vary from eight to ten. Eggs of this species in my collection from Iceland and Greenland are smooth in texture of shell, oval in shape, and of a rich cream-colour. In size they measure from $2\frac{9}{40}$ by $1\frac{12}{40}$ to $2\frac{16}{40}$ by $1\frac{25}{40}$ inch.

In working out the synonymy of the present species I have had some difficulty in fixing on the correct name it should bear. That it should stand generically separate I have no doubt; and I at first thought that it should bear the name, by which it is tolerably well known, of *Histrionicus torquatus*; but in this I was wrong, as, if the generic appellation *Histrionicus* should stand, the bird would have to be called *Histrionicus minutus* (L.); for I have now convinced myself beyond the shadow of a doubt that Linnæus's *Anas minuta* was really the female of the present species. As, however, Lesson only recognizes *Histrionicus* as a subgenus, and does not give it true generic rank, it is inexpedient to use it; and therefore the next oldest generic title, that of *Cosmonetta*, Kaup, the type of which is the Harlequin, will have to be substituted, and the correct name is, therefore, *Cosmonetta histrionica* (L.).

The specimens figured are the adult male and female above described.

In the preparation of the above article I have examined the following specimens:—

6

E Mus. H. E. Dresser.

a, b, ♂ *ad., c,* ♀ *ad.* Öfjord, Iceland, 1871 (*A. Benzon*). *d,* ♂ *ad.* Greenland (*Erichsen*). *e,* ♂ *juv.* Hakodadi, December 1864 (*Whitely*). *f,* ♀. Point Lepreaux, Bay of Fundy, December 1st, 1862 (*H. E. D.*). *g, h,* ♀. Point Lepreaux, December 5th. *i,* ♂ *ad.* December 12th, 1862 (*H. E. D.*). *k,* ♂ *juv.* Point Lepreaux, 1864 (*G. Thomas*).

Genus HARELDA.

Anas apud Linnæus, Syst. Nat. i. p. 203 (1766).
Clangula apud Boie, Isis, 1822, p. 564.
Clangula apud Fleming, Phil. of Zool. ii. p. 260 (1822).
Platypus apud C. L. Brehm, Lehrb. eur. Vög. ii. p. 840 (1824).
Harelda, Stephens in Shaw's Gen. Zool. xii. pt. ii. p. 175 (1824).
Fuligula apud Bonaparte, Synop. B. U. S. p. 395 (1826).
Pagonetta apud Kaup, Natürl. Syst. p. 66 (1829).
Crymonessa apud Macgillivray, Man. Brit. B. ii. p. 186 (1842).

The single species belonging to this genus is peculiar in having the central rectrices even much more elongated than in *Dafila*, and in that respect stands alone amongst the marine Ducks. The Long-tailed Duck inhabits high latitudes, its range being circumpolar. Full particulars respecting its range, habits, and nidification are given in the following article.

Harelda glacialis has the bill much shorter than the head, about as broad as high at the base, slightly narrowing and rounded towards the tip; unguis large, roundish, convex, decurved; lamellæ strong, the ends visible along the gape-line; nostrils large, oblong, subbasal; trachea gradually narrowed, at the lower end expanded, having six rings extremely narrow before, with a transversely oblong tympanum, membranous in front; wings short, pointed, the first and second quills about equal and longest, scapulars much elongated and pointed; tail small, graduated; but the central rectrices are much elongated and tapering; legs short, placed far aft, tarsus anteriorly scutellate; hind toe moderate but broadly lobed; anterior toes long; claws moderate, slender, slightly curved.



J.G.Keulemans lith

M&N.Hanhart imp

LONGTAILED DUCK.

♀ AND YOUNG ♂



LONGTAILED DUCK.
HARELDA GLACIALIS.

HARELDA GLACIALIS.

(LONG-TAILED DUCK.)

Anas longicauda islandica, Briss. Orn. iv. p. 379 (1760).
Anas longicauda ex insula Terræ-novæ, Briss. tom. cit. p. 382 (1760).
Anas querquedula ferroënsis, Briss. tom. cit. p. 466, pl. 40. fig. 2 (1760).
Anas glacialis, Linn. Syst. Nat. i. p. 203 (1776).
Anas hyemalis, Linn. op. cit. p. 202 (1776).
Le canard à longue queue de Terre neuve, Buff. Hist. Nat. Ois. ix. p. 202 (1783).
Anas miclonia, Bodd. Table des Pl. Enl. p. 58 (1783).
Anas brachyrhynchos, Beseke, Vög. Kurl. p. 50, pl. 6 (1792).
Anas longicauda, Leach, Syst. Cat. M. & B. Brit. Mus. p. 37 (1816).
Clangula glacialis (L.), Boie, Isis, 1822, p. 564.
Platypus glacialis (L.), C. L. Brehm, Lehrb. Eur. Vög. ii. p. 840 (1824).
Platypus faberi, C. L. Brehm, op. cit. p. 1004 (1824).
Harelda glacialis (L.), Steph. in Shaw's Gen. Zool. xii. pl. ii. p. 175 (1824).
Fuligula glacialis (L.), Bp. Synop. B. U. S. in Ann. Lyc. Nat. Hist. New York, 1826, p. 395.
Pagonetta, Kaup (*Anas glacialis*, Linn.), Nat. Syst. p. 66 (1829).
Clangula hiemalis (L.), C. L. Brehm, Vög. Deutschl. p. 933 (1831).
Clangula faberi, C. L. Brehm, op. cit. p. 935 (1831).
Clangula megauros, C. L. Brehm, op. cit. p. 936 (1831).
Clangula musica, C. L. Brehm, op. cit. p. 937 (1831).
Clangula brachyrhynchus, C. L. Brehm, op. cit. p. 938 (1831).
Crymonessa glacialis (L.), Macgillivray, Man. Brit. B. ii. p. 186 (1842).

Long-tailed Duck, *Calloo*, English; *Eun-buchuinn*, Gaelic; *Harelde glaciale*, French; *Moretta codona*, Italian; *Eisente*, *Winterente*, *Eistauchente*, German; *De Ijseend*, Dutch; *Havlit*, *Havlyk*, Danish; *Edvedla*, Færoese; *Aglek*, Greenlandic; *Havelli*, Icelandic; *Isand*, Norwegian; *Alfogel*, Swedish; *Alli*, *Allitelkkä*, Finnish; *Vostrohwostka*, Russian.

Figuræ notabiles.

Edwards, Gleanings, pl. 280; id. Nat. Hist. pl. 156; D'Aubenton, Pl. Enl. 999, 1008; Werner, Atlas, *Palmipèdes*, pl. 52; Kjærb. Orn. Dan. taf. 49; Fritsch, Vög. Eur. taf. 48. fig. 7, and taf. 49. figs. 1, 3; Naumann, Vög. Deutschl. taf. 319; Sundevall, Svensk. Fogl. pl. 63. figs. 3, 4, 5; Gould, B. of Eur. pl. 382; id. B. of G. Brit. v. pl. 33; Schlegel, Vog. Nederl. pls. 309, 310; Audub. B. of Am. pl. 410; Wilson, Am. Orn. pl. 70; Bechst. Orn. Taschenb. taf. 37.

♂ *ad. ptil. æst.* fronte et capitis lateribus sordidè cinereis, regione oculari fere albâ: pileo, striâ in fronte, collo, gulâ, gutture et pectore nigris, gulâ vix albido notatâ: corpore suprà nigro, dorsi plumis et scapu-

laribus conspicuè ferrugineo marginatis: remigibus nigricantibus, primariis extùs pallidioribus, et secundariis fulvido lavatis: uropygio, supracaudalibus et rectricibus centralibus nigris: caudâ reliquâ albâ, rectricibus centralibus valdè elongatis: corpore imo subtùs albo, hypochondriis vix cano lavatis, subalaribus nigro fuscis: rostro nigricanti-plumbeo, versus apicem fasciâ aurantiacâ notato: pedibus plumbeis: iride fuscâ.

♂ *ptil. hiem.* fronte et capitis lateribus pallidè cinereis, capite et collo albis, maculâ magnâ in colli lateribus utrinque nigrâ, in parte imâ castaneâ: dorso centraliter et dorsi lateribus, uropygio, supracaudalibus et rectricibus centralibus nigris: scapularibus albis: alis ut in ptilosi æstivali picturatis, sed secundariis castaneo lavatis: pectore nigro: corpore reliquo subtùs albo.

♀ *ad. ptil. hiem.* pileo et nuchâ nigro-fuscis, collo postico pallidè nigro-fusco griseo immixto: dorsi lateribus, dorso centraliter et uropygio nigricantibus: scapularibus fusco-cinereis centraliter fuscis: alis et caudâ ut in mare picturatis sed sordidioribus: rectricibus centralibus haud elongatis: capitis lateribus albis: mento et maculâ in colli lateribus fuscis: gutture fusco lavato et pectore superiore nigro-fusco, corpore reliquo subtùs albo.

Adult Male in summer (Greenland). Forehead and fore part of the crown, together with the sides of the head, diminishing to a broad mark behind the eye, pale sooty grey, the space round the eye almost pure white; rest of the crown, a stripe passing along the centre of the forehead, the entire throat, neck, and breast black, the throat slightly marked with white; upper parts black, the feathers on the fore part of the back and the scapulars broadly margined with chestnut or rusty red; secondaries brownish, and the primaries on the outer web lighter; rump, upper tail-coverts, and central rectrices black, the remaining tail-feathers white, the two central rectrices much elongated; underparts below the breast, and sides of the rump, pure white; flanks faintly washed with French grey; under wing-coverts brownish black; bill dusky blackish lead-colour with a band of pinkish orange across; iris deep reddish brown; legs and feet lead-blue with the articulations blackish. Total length about 22 inches, culmen 1·2, gape 1·7, wing 9·0, tail 8·0, the central rectrices extending nearly 5·0 beyond the rest; tarsus 1·4.

Adult Female in summer (Great Zemelskai Tundra, Petchora). Resembles the old female in winter dress, but is greyer, the upper parts being blackish brown, all the feathers having greyish ashy brown margins, which give the upper surface of the body a mottled appearance; wings duller and browner than in winter, the secondaries externally broadly margined with greyish brown; underparts white, the broad band across the upper breast dull dark ashy, not deep brown as in the winter, and the flanks are slightly tinged with ashy grey.

Adult Male in winter (Point Lepreaux, New Brunswick). Forehead and sides of the head light ashy grey, darker and browner round the eye; a broad long patch on the sides of the neck dark brown, becoming chestnut-red on the lower part, rest of the head and neck pure white, this colour extending on to the upper part of the breast and back; scapulars pure white, lower part and sides of the back (forming a sort of saddle), rump, upper tail-coverts, and central rectrices deep black; wings as in the summer dress, but the secondaries are externally washed with chestnut; undersurface of the body, except as above stated, as in the summer dress, the breast being black, and the abdomen white.

Adult Female in winter (Point Lepreaux, 25th October). Crown and nape blackish brown, becoming lighter and intermixed with grey on the hind neck; centre and sides of the back and rump black, as in the male; scapulars dark ashy brown with dark brown centres; wings and tail as in the male, but duller, and the central rectrices not elongated; sides of the head dull white; chin and a large patch passing

down each side of the neck dark brown; throat washed with dull dark brown, and a broad band of blackish brown across the upper breast; rest of the underparts white.

Young in winter (Hiddensee). Differs from the female above described in having the upper parts lighter and duller, the sides of the head whiter, and the breast less marked with brown.

This Duck inhabits northern latitudes in Europe, Asia, and America, its range being circumpolar. It breeds in the extreme north at inland pieces of water, and near the coast, but in the winter migrates further south, being at that season almost exclusively met with on the sea-coast.

With us in Great Britain it is a winter visitant, frequenting our coasts in but small numbers on passage during the winter season in the southern portions; but in Scotland it is tolerably common. It is now and then met with in the south of England. Mr. Cecil Smith informs me that he has seen a good many specimens obtained in South Devon, and possesses one shot in the Exe in November 1866. Mr. J. E. Mansel-Pleydell says that, according to Dr. Pulteney, it visits the coasts of Dorset in hard winters, and has been shot up in the country near St. Giles's, and he was informed by the Rev. J. H. Austen that two were shot at Poole in May 1840. A young male was shot in Portland Roads by the late R. S. Wardell in January 1852; and Mr. Thompson records a female as killed in Weymouth Backwater in January 1857. On the east coast it is met with regularly during winter, and, Mr. Stevenson informs me, is found both in adult and immature dress, though rare in the former. It has also been obtained in full summer plumage in Norfolk; for one was shot at Hickling Broad in June, as recorded by Mr. Stevenson (Zool. 1856, p. 5160); but those referred to in the 'Zoologist,' 1869, p. 6447, as obtained in fully adult dress, proved subsequently to have been shot off the Scotch coast. Mr. Stevenson further writes to me as follows:—"During sharp weather in November 1868 a flock of about a dozen frequented the 'Bay' at Heacham, near Lynn, for some days, of which five were adult males; and at the turn of the tide they were generally seen swimming about two hundred yards from the shore. The young birds rarely appear on our coast before October, and as rarely leave the sea for any inland water." Mr. Cordeaux says that it visits the Humber district in winter, mature birds being seldom met with. In Scotland, Mr. Robert Gray writes (B. of W. of Scotl. p. 388), "it is found in the winter season from October till March; it is very common in the Sound of Harris, in the Outer Hebrides, and is likewise met with in considerable numbers off the coasts of Skye, Mull, and Islay; but southwards of the last-named islands its occurrence is extremely irregular and uncertain." Dr. Saxby appears to doubt that it has ever been found breeding in Shetland, though Mr. Wolley obtained eggs said by a reliable person to have been taken there, and he himself received eggs stated to have been those of the present species. He writes (B. of Shetl. p. 257) that it arrives in small flocks late in September or early in October, remaining through the winter until the second week in April. According to Thompson it is an occasional and probably a regular winter visitant to the coast of Ireland, but in very limited numbers.

In Greenland it is, Professor Newton says, "common on the whole coast, and breeds also on the Parry Islands and on the land westward of Davis Strait. In Iceland it breeds numerously; and Captain Feilden says that it appears in the Færoes in autumn in large flocks, keeping in the bays and fiords, and remains till March; some have been seen during the summer, and Müller thinks they have bred in the islands. Wolley mentions having seen a single male in the end of

June 1849; and I saw a male that was killed on the sea near Thorshavn in the beginning of June 1872." In Scandinavia it is a tolerably common species. Mr. R. Collett informs me that in Norway it breeds commonly above the arctic circle, especially in the interior, up to the Russian frontier. On the small sheets of water in the southern fells it is rarer, but breeds on the Dovre, in the Hallingdalsfjelds, in the Jotunfjeld, and in Valders. During passage and in the winter season it is found in large flocks on all the fiords along the coast; and though most leave the country for the winter, yet in some seasons large flocks remain throughout the winter near Christiania. Nilsson states that it is very common during summer in the northern portions of Sweden and Lapland, and in the southern portions during winter. It arrives in Södermanland late in September, and in November and December is numerous off the coasts of Skåne, remaining there till the spring. Dr. Palmén says that it is found breeding regularly only in the fells of Finnish Lapland; but during passage and in winter it is common on the coasts. Malm states that it is occasionally found during summer in Enare Lappmark; Dr. Palmén adds that it breeds annually in the fell districts between Enontekis and Finmark; and Von Wright found it numerous in June near Karesuvanto. In Northern Russia it is numerous, and breeds commonly in the more northern portions. Kessler says that it remains in the open bays of Onega during the winter, especially in that of Svjätuch, which never freezes up. Near Archangel it breeds not uncommonly; and Messrs. Harvie-Brown and Seebohm found it numerous on the Petchora. It is said by Von Heuglin to be the commonest species of Duck in Novaya Zemlya and Waigats Island, and was met with in countless flocks in the shallow rivers and on the coast, as also on inland lakes and brackish waters. The old birds, he says, moult in August; and he met with half-fledged young as late as September.

Professor Malmgren says (Öfv. K. V. Ak. Förh. 1863, p. 108) that it is found sparingly on the coasts of Spitsbergen, and breeds at the small freshwater ponds which are not unfrequently found on the low flat islands. Whilst at anchor in Kobbe Bay, in 79° 14′, a pair were seen on the 28th May; and he found a female frequenting a small swamp on the Dépôt Island, in 80° N. lat. Mr. Sabanäeff informs me that it is found, though rarely, in Central Russia during passage, and is occasionally found nesting on the banks of rivers in the Jaroslaf Government. He found it common on the Ural, and believes that it breeds on the borders of the lakes in the district of Shadrinsk. All along the Baltic coast it is numerous. During the winter it is, Borggreve says, the commonest Duck; and I have seen vast flocks on the coasts of Pomerania and the Baltic provinces when travelling there during the winter season. Kjærbölling says that it is very common on the coasts of Denmark during winter, but leaves in the spring, though stragglers have been obtained as late as May. Mr. Labouchere informs me that it only visits the coast of Holland in small numbers during passage and in winter; and it visits the northern coasts of Belgium and France during severe winters, but rarely reaches the southern coasts of the latter country, only two or three instances of its occurrence near Nîmes and Hyères being known during many years. It is not recorded from Spain, and is extremely rare on the Italian coast. Two captures in Lombardy and one in Tuscany are recorded; but it is not known to have been met with in Sicily or Sardinia, nor has it been found in Greece or Turkey. In Southern Germany it is found as a rare straggler during exceptionally severe winters. Dr. A. Fritsch states (J. f. O. 1872, p. 371) that several individuals were obtained on the lakes of Chumetz in

the winter of 1842; and Herr von Pelzeln mentions that there are specimens in the Vienna Museum which were obtained on the Neusiedler Lake. Professor von Nordmann states that he never met with it on the Black Sea; and he expresses surprise at the statement made by Ménétriés to the effect that a pair were obtained at Bakou, on the Caspian Sea. It has not been met with on the African coast.

To the eastward it is found right across the continent of Asia, where it breeds in the high north, and migrates southward in the winter, at which season it is found on Lake Baikal; and Mr. Swinhoe says that Père David received a specimen which was shot at Takoo, at the mouth of the Peiho river, in China; and Mr. Whitely states (Ibis, 1867, p. 208) that several specimens were obtained at Hakodadi in Japan, in January 1865, from native bird-catchers, and that it is common in the harbour in the winter.

It is found in the extreme north of Siberia. Von Middendorff first observed it on the Boganida (70° N. lat.) on the 29th May; but on the Taimyr river (74° N. lat.) it was seen on the 5th May. In the Stanowoi Mountains he saw a single male on the 8th May. Dr. Radde says that it winters in large numbers on the Angara where that river flows out of the Lake Baikal, and assumes the summer plumage there also.

In the Nearctic Region, as in the Palæarctic, it breeds in the extreme north, and migrates southward for the winter. It is said to be found right across the continent in the northern fur-countries; and, judging from the myriads I have seen migrating southward, it must be very numerous on the eastern side of the continent. I found it generally distributed and common during winter on the coasts of Nova Scotia, New Brunswick, and Maine; and it is stated by Dr. E. Coues to extend its range as far south as South Carolina. He also states that it is found on the great lakes of North America. On the west side it is recorded by Mr. Bannister as "very common at St. Michael's;" and to this Mr. Dall adds that it is "an extremely common Duck on the sea-coast, but very rare on the Yukon. One specimen was killed June 1st, 1868, at Nulato while the river was full of floating ice. . . . . Breeds abundantly on every beach, in a very simple nest without any lining." There is, I may add, a specimen in the Leiden Museum from the Aleutian Islands; and Mr. H. W. Elliott writes (Orn. Pryb. Isl. no. 508) that it is "common and resident in the Prybilov Islands, and breeds on the lakelets and sloughs of St. Paul's in limited numbers." I have had opportunities of observing the present species (chiefly during the winter season) on the north-east coasts of America, where it is at times very numerous. I frequently spent a few days with the lighthouse-keeper at Point Lepreaux, in the Bay of Fundy, and made a point of being there during the time the Ducks were on passage, when thousands of the various species might be seen at once from the lighthouse, the present species being one of the most numerous, and its clear call-note, which, when uttered by many Ducks at once, merged into a sort of cackle, might be heard everywhere. The Indians, who frequented that portion of the coast chiefly for the porpoise-fishery, call this bird with more truth than gallantry "Old squaw," because, as one old hunter informed me, they were like a squaw, always chattering and could not possibly hold their tongues for any length of time. I found this Duck a hardy sea-frequenting species, frequently outside in hard weather, though, as a rule, during stormy and hard weather they took shelter in the coves and small inlets. An excellent diver, it appears to obtain its food chiefly under water, floating in with the tide, and every now and again diving in

search of crustaceans, with which I usually found their stomachs filled. Though shy and wary, they may be shot by laying in wait for them as they float in with the tide, or by watching one's opportunity, and taking short runs down from the nearest cover to the shore as the flock is under the water, and lying down just before they rise to the surface. With a little practice one is able to calculate with tolerable accuracy how long they will remain under water; and even when the nearest cover was far from shore I have managed to get within range in two or three runs. I have often been in ambush for long, quite within range of a flock, amusing myself by watching them feeding and disporting themselves; and certainly the male bird is one of most elegant and beautiful of our sea-Ducks. They are exceedingly expert swimmers, playful, active, and sometimes quarrelsome; but when feeding they appear to forget every thing else, and to devote all their energies to the serious business of obtaining food. When they believe themselves to be free from danger the entire flock dive together, one appearing to give the signal by turning end up and immediately disappearing under the surface, and the others all follow suit; but should any thing occur to excite suspicion, one at least remains on the surface whilst the others are diving, and acts as a sentinal. When disturbed, they fly off with great rapidity, rising easily from the surface; and they usually fly only a few feet above the surface of the water, either in Indian file or else in an irregular flock; and when they alight again they do so rather abruptly. When swimming the male erects his long tail in an oblique position, sometimes holding it almost erect.

One season, just as the spring was approaching, I was detained on the Great Belt whilst crossing from Sweden through Denmark to Germany, owing to the difficulty in crossing the ice. The ice was in some places broken, and in others was full of large holes; and the myriads of Ducks which I saw was almost inconceivable, a large proportion of them being Long-tailed Ducks. The fishermen caught numbers by sinking nets through the holes in the ice and placing them in a zig-zag position along the holes on the bottom; the Ducks when diving after shells got entangled in the meshes of the net. I went out several times to assist in taking up the nets; and, to judge by the numbers caught, it must have been a profitable business. Dr. Sundström informs me that on the coasts of Upland and Södermanland, in Sweden, the Long-tailed Ducks appear as soon as the ice begins to break up in holes, and are found in myriads until late in March or early in April. On the coast of Åland vast numbers are shot by the peasants, either by watching for them near the open places in the ice, or by putting out stuffed decoys. "It is not very unusual," he writes, "for one peasant to shoot in a single spring 300 or more Long-tailed Ducks, besides Eiders, Scoters, and other Ducks; and at one peasants' place called Klåfskär, where this bird is very numerous, the peasant has shot as many as 600 to 800 in one spring, all being killed with a pea-rifle. Some of these would be eaten directly; but most of them are salted down for future use." I have not had an opportunity of observing the present species during the breeding-season, and am indebted to Messrs. Harvie-Brown and Seebohm, who have just returned from a most successful expedition to North-east Russia, for the following notes on its nidification. The former of these gentlemen writes to me as follows:—"That portion of Siberia in Europe visited by Mr. H. Seebohm and myself during the past summer of 1875 may, with some reason, be considered the head quarters during the breeding-season of several species of our European Anatidæ. The apparent total absence of the

common Wild Duck (*Anas boschas*), however, was curious, taking into consideration its almost universal distribution throughout Europe and the rest of the Palæarctic Region. We did not identify this latter species during the whole time of our stay on the banks of the river Petchora, although Alston and I found it abundantly on the delta of the Dvina and around Archangel.

"Not the least abundant of the Ducks which we met with in North-eastern Russia was the Long-tailed Duck (*Harelda glacialis*); but, curiously enough, we did not see them during migration, and only once obtained specimens before we reached Alexievka and visited the Great Zemelskai tundra. On that occasion we found them in pairs, frequenting the koorias or creeks and backwaters from the river, and the small lakes and pools on the islands of the delta, opposite the village of Kuya. Afterwards, during our stay at Alexievka, we constantly heard their peculiar cry upon a large sheet of water close to the houses, and saw them also upon the lakes and pools of the different willow-covered islands upon which we landed. But they were by no means so numerous upon the islands of the delta as upon the lakes of the tundra, nor can we be absolutely certain that they bred upon the former. Some of the Zyriani workmen employed by M. Arendt, the manager of M. Sideroff's Timber-Company at Alexievka, made frequent visits to the tundra on the fast land in the neighbourhood, going over in the morning and returning the same day. They and others of the workman remaining on the island brought in numbers of eggs at night, which they had found during their spare hours, or in the evening after their work for the day was over. It was not always easy for us to ascertain whether these eggs were obtained on the islands or on the delta; but I am inclined to think that any eggs of the Long-tailed Duck which were brought to us were procured from the latter locality in every instance. On all our visits to the tundra we ourselves found the species in question the commonest and most generally distributed of the family, a pair or two, often more, frequenting almost every little freshwater lake or tarn, which latter are dotted up and down all over the landscape, and whose name is legion. Especially abundant are these little tarns in the neighbourhood of the Yooshina river, about twenty versts down the Petchora from Alexievka, and again at Stanavoialachta, the old lading port of the Company. Of all the species of Duck I have ever met with, the Long-tailed Duck is the tamest and the easiest to approach. Often we walked up deliberately to within thirty or forty paces, and fired at them. But the rapidity and ease with which they dived was often the means of their eluding the charge of shot which hurtled over the water just as they had disappeared beneath the surface. Their habits in some respects resembled those of some species of Grebe, trusting often more to quickness and power of diving than to that shyness and wariness which is exercised by other species. The paired birds seemed to be very solicitous for one another's safety; and if one were killed or wounded, the other would repeatedly return in the face of the most imminent danger, and circle round or even alight on the water beside its mate. Their solicitude for their young, as with other species of Duck, was also strongly exhibited; and the mother as the season advanced and the young were hatched became much more wary and careful. If danger to the young became imminent, however, she suffered her anxiety to get the better of her prudence, and she became bold and fearless for herself.

"The nests of the Long-tailed Duck were usually placed under a thick bush of stunted willow (*Salix glauca*) upon the tundra near the edges of the lakes, as described to me by our

Samoyede servant (Simeon), who was a most useful and active assistant in search for eggs. Two old nests, however, which we found ourselves, were deep circular hollows sparingly lined with down, and were placed amongst the vegetable scum which accumulates on the surface of the stagnant brackish water of the inlet of the sea at Dovinik, and which had been drifted up and left high and dry by a former higher level of the water when the latter again receded. This scum, when dried by the sun, has the appearance of thin felt or brown papier-mâché; and so close is the resemblance that it was once jocularly suggested that it might be used for filling up holes in an old pair of felt boots belonging to our good friend and companion Piottuch. I fear, however, it would hardly have withstood the application of needle and thread. As the nests above mentioned were found just where a line of this peculiar substance had been left by the receding water, we did not satisfactorily make out whether the birds had scraped (or chosen) a hollow where the dried scum was most plentiful, or had gathered a portion of it and disposed it round the edges of the nest afterwards. I am inclined to think the former the most likely, however, judging from the general appearance of the nests and their surroundings. There was no other cover or shelter in the immediate neighbourhood, such as the birds on the higher tundra and by the willow- and dwarf-birch-covered sides of the freshwater lakes can avail themselves of. Notwithstanding the numbers of Long-tailed Ducks we saw and shot, their eggs were by no means amongst the most plentiful obtained, either by the Zyriani workmen or by our own party.

"On the 14th July we met with the Long-tailed Ducks in a small flock far out near the sand-banks of the Golaievskai group of islands, which stretch across the entrance of the Petchora Gulf. We have no reason to doubt that there were many more besides those we identified amongst the immense masses of Ducks which had congregated on the sandy shores of these far-out islands; but we believed these great flocks to have been for the most part composed of Black Scoters, which at the same season of the year also gather together in vast numbers on the White Sea, as was once observed by Alston and myself near Suzma (Ibis, 1873, p. 71). In the uncertain light of early morning, or when refraction was busily at work, it was no easy matter to identify a Duck at any distance. Indeed it was often a matter of some difficulty, as the captain of the river-steamer remarked at the time, 'to distinguish between an *ostrov* (island) and a flock of *ootki*' (Ducks)."

To these notes Mr. Seebohm adds the following information:—"The Long-tailed Duck is by no means a close sitter; and we had the greatest difficulty in finding the nest, the female apparently slipping off quietly before we came near. We only succeeded in obtaining four sittings of eggs, containing respectively three, five, six, and seven. None of these nests we found ourselves; but we found two nests containing Long-tailed Ducks' down. These were mere hollows in the grass containing no lining but the down, and were both of them situated amongst the débris left by a recent flood or high tide on the shores of the inland sea or lake, where we found the Little Stint breeding.

"The down is small, about the same size as that of the Shoveller and Teal, darkish brown with pale centres, slightly darker than that of the Pintail, not quite so dark as that of the Shoveller.

"The Long-tailed Duck is decidedly a quarrelsome bird, and we frequently saw them

fighting both on the wing and on the water. The note is very loud, a distinct *col-go'-y*, with strong accent on the second syllable; and by this name we always spoke of it to our Russian and Samoyede servants."

The eggs of the present species are oval, somewhat elongated in form, greyish buff with a faint greenish tinge in colour, quite uniform in shade, and measure from $2\frac{5}{40}$ by $1\frac{1}{2}$ inch to $2\frac{1}{4}$ by $1\frac{22}{40}$ inch in size.

The specimens figured are:—on the first Plate an old male in winter dress in the foreground, and a male in full summer plumage in the background; and on the second Plate an old female in breeding-dress, and a young male.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, b, ♂, *c,* ♀. Greenland, summer plumage (*Erichsen*). *d,* ♂. Greenland. *e,* ♂ *juv.* Hiddensee, Germany, January 27th, 1870 (*Schlüter*). *f,* ♂, *g,* ♀. Point Lepreaux, October 25th, 1861 (*H. E. D.*). *h,* ♂. Point Lepreaux, New Brunswick, January 1862 (*H. E. D.*).

E. Mus. Feilden and Harvie-Brown.

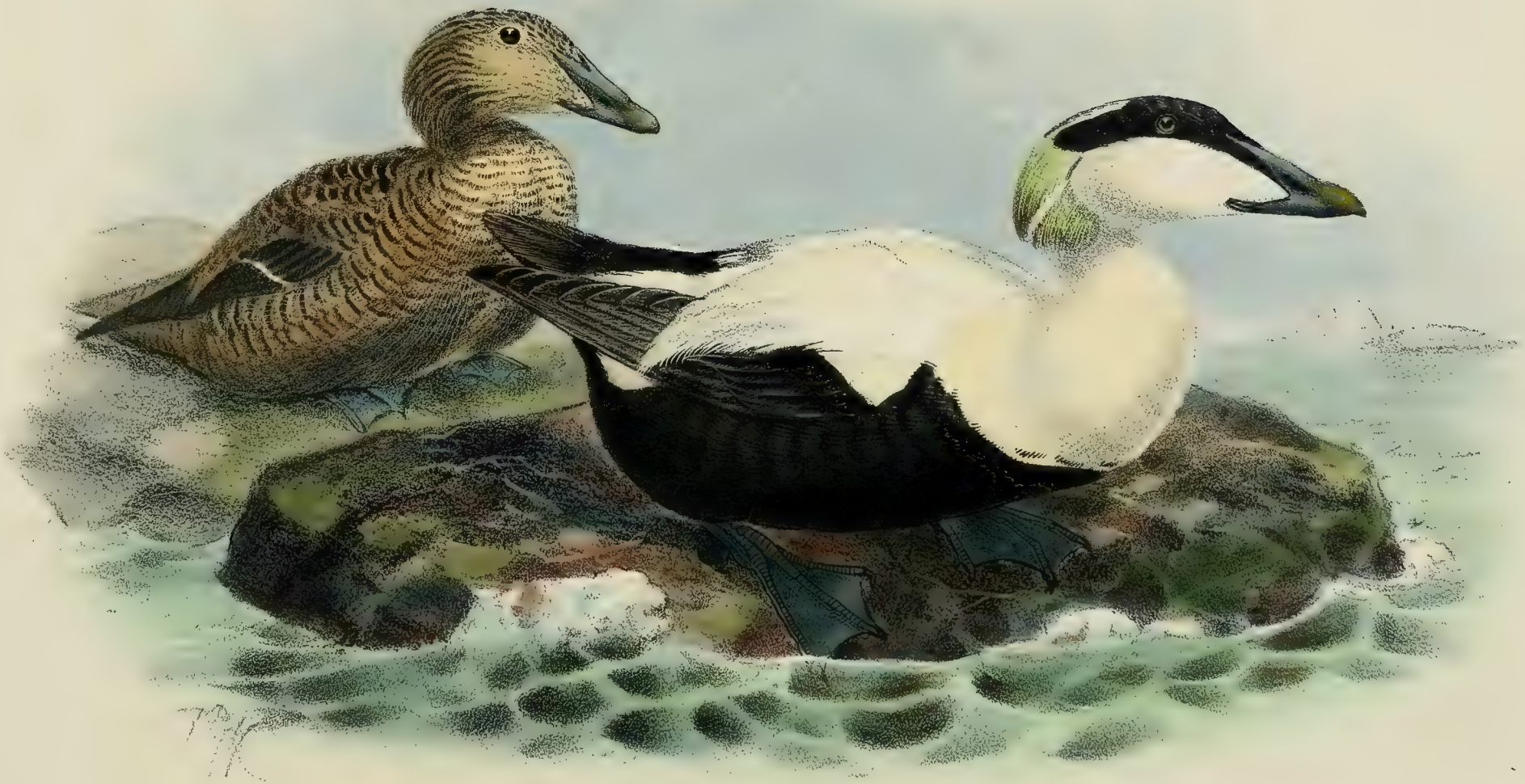
a, ♀ *ad.* Great Zemelskai tundra, Petchora, July 1875 (*J. A. H.-B.*).

Genus SOMATERIA.

Anas apud Linnæus, Syst. Nat. i. p 198 (1766).
Anser apud Leach, Syst. Cat. M. & B. Brit. Mus. p. 37 (1816).
Somateria, Boie, Isis, 1822, p. 564.
Clangula apud Boie, ut suprà.
Fuligula apud Stephens in Shaw's Gen. Zool. xii. pt. ii. p. 206 (1824).
Macropus apud Nuttall, Man. Orn. U. S. ii. p. 451 (1834).
Polysticta apud Eyton, Hist. Rar. Brit. B. p. 79 (1836).
Stelleria apud Bonaparte, Comp. List, p. 57 (1838).
Eniconetta apud Gray, List of Gen. of B. p. 95 (1840).
Harelda apud Keyserling & Blasius, Wirbelth. Eur. p. 230 (1840).
Heniconetta apud Agassiz, Nomencl. Zool. Ind. Univ. p. 178 (1846).

The Eiders inhabit the northern portions of the Palæarctic and Nearctic Regions, three species being resident in the Western Palæarctic Region. By many authors one of these, *Somateria stelleri*, has been separated generically from the true Eiders, and has received several generic titles from various authorities; but it is in every respect so true an Eider that it appears unadvisable to separate it, and I have therefore ranged it in this genus. The Eiders are essentially marine Ducks, never being found away from the sea. They have a strong, rapid flight, and usually fly at no great altitude above the water. They swim and dive with great ease, obtaining their food chiefly by diving. They feed on crustacea, mollusca, and radiata. Their nests are placed on the ground, usually under a bush or stone, and consist of a depression scratched in the ground and filled with down intermixed with small twigs, grass, &c. They usually breed in company; and *Somateria mollissima* frequently places its nest close to human habitations, and is carefully preserved and protected in order that the valuable down with which its nest is cushioned may be collected. Their eggs, which vary in number from five to eight or nine, are pale greenish-grey in colour, and rather smooth in surface of shell.

Somateria mollissima, the type of the genus, has the bill nearly as long as the head, higher than broad at the base, depressed towards the end, where it is narrowed and rounded; upper mandible with the lateral sinus large, the frontal angles long, narrow, soft, and tumid; unguis large, roundish, slightly convex; gape-line curved, the ends of the lamellæ not projecting; nostrils large, elongated, oval, submedian; trachea of nearly uniform width, with a transversely oblong dilatation at the lower end projecting more on the left side; bronchi very wide; wings rather short, pointed, the second quill longest, secondaries elongated, tapering, curved in a sickle-shape outwards; tail short, rounded, stiff, slightly decurvate.



SOMATERIA MOLLISSIMA.

IXXX

SOMATERIA MOLLISSIMA.

(EIDER DUCK.)

Anas mollissima, Linn. Syst. Nat. i. p. 198 (1766).
Anser lanuginosus, Leach, Syst. Cat. Mamm. & B. Brit. Mus. p. 37 (1816, ex Briss.).
Somateria mollissima, Boie, Isis, 1822. p. 564.
Anas cutberti, Pall. Zoogr. Rosso-Asiat. ii. p. 235 (1831).
Somateria danica, Brehm, Vög. Deutschl. p. 890 (1831).
Somateria norwegica, id. tom. cit. p. 892, Taf. xliii. fig. 1.
Somateria platyurus, id. tom. cit. p. 892.
Somateria faeroeensis, id. tom. cit. p. 893.
Somateria megauros, id. tom. cit. p. 894.
Somateria islandica, id. tom. cit. p. 895.
Somateria borealis, id. tom. cit. p. 896.
Somateria leisleri, id. tom. cit. p. 896.
Somateria planifrons, id. tom. cit. p. 897.
Somateria st. cuthberti, Eyton, Cat. Brit. B. p. 58 (1836).
Somateria thulensis, Malmgr. J. f. O. 1865, p. 396.

Eider Duck, English; *Lach mhor* in the Hebrides, *Colk* in Harris (*H. J. Elwes*); *Morillon*, *Eider*, French; *Eidergans*, German; *De Eidereend*, Dutch; *Edderand*, Danish; *Ejder*, Swedish; *Ejder-Gås*, *Estegg*, Norwegian; *Gagka Normota*, Russian.

Figuræ notabiles.

Gould, B. of Eur. v. pl. 374; Yarr. Brit. B. iii. p. 201 (1843); Naum. Vög. Deutschl. Taf. 321; Kjærb. Orn. Dan. Aft. xlix; Schlegel, Vög. Niederl. pls. 305, 306; Gould, B. of Gt. Brit. pt. xvii.

♂ suprà albus, scapularibus vix flavicantibus: capite antico et laterali nigris, parte medianâ posticâ usque ad occiput albâ: capite laterali albo: regione auriculari posticâ et collo toto postico pallidè viridibus: dorso postico et uropygio nigris: tectricibus alarum minimis et medianis albis dorso concoloribus, majoribus nigris: remigibus nigricanti-brunneis, secundariis dorsalibus falciformibus, albis: caudâ griseo-brunneâ: gutture toto albo, parte inferiore vix flavicante usque ad pectus anticum pallidè lilascentem: corpore reliquo subtus nigro: subalaribus albis: rostro sordidè olivaceo-viridi, vix flavicante, apice brunnescenti-albâ: pedibus pallidè olivaceo-viridibus, unguibus brunnescenti-nigris: iride brunneâ.

♀ omninò diversa: brunnescens: pileo summo colloque brunneis fulvo striatis: capitis lateribus fulvescentibus punctulis parvis brunneis notatis: dorso brunneo, rufo et fulvo transfasciato, uropygio magis rufescente: tectricibus alarum dorso concoloribus, majoribus albo terminatis fasciam alarem formantibus: remigibus saturatè brunneis, secundariis rufescenti marginatis, externis etiam albo terminatis, fasciam alteram alarem exhibentibus: caudâ griseo-brunneâ: gutture fulvescente punctulis brunneis vario: corpore subtùs brunneo, parte superiore et hypochondriis ferrugineo tinctis et conspicuè nigro et fulvo transfasciatis: rostro et pedibus ut in mari coloratis, his saturatioribus.

♂ *hornot.* similis feminæ adultæ sed saturatior, plumis obsoletè fulvo marginatis, paucis ad basin albicantibus: facie laterali plagâ triangulari nigricante notatâ: subtùs pallidè brunneus, pectore antico brunneo, albo et fulvo transfasciato: fasciis alaribus albis vix conspicuis.

Adult Male. Top of the head deep blue-black, with a line of white dividing the centre of the crown from the level of the eye to the nape; cheeks, sides of the neck, and entire back and scapulars white, slightly tinged with yellow on the latter; nape and hinder portion of the auricular region pale sea-green; lower part of the centre of the back, rump, and upper tail-coverts deep black; lesser and median wing-coverts white, slightly tinged with yellow, the greater coverts black; quills blackish brown, except the innermost secondaries, which are white and sickle-shaped; tail greyish brown; throat white, gradually shading into yellowish on the lower part, until it becomes a pale stone-colour on the upper part of the breast; rest of the under surface of the body black, with a conspicuous white patch on either side of the rump: under wing-coverts white; bill dull olive-green, almost olive-yellow in old birds, nail brownish white; feet light olive-green, claws brownish black; iris brown. Total length 22 inches, culmen 2·3, wing 11·6, tail 4·0, tarsus 1·75.

Male in changing plumage. Head deep purplish black on the forehead and on either side of the crown, with a few little whitish spots interspersed; the centre of the crown to the occiput fulvous brown; sides of the face whitish, more inclining to brown just in front of the eye; hinder part of the ear-coverts washed with sea-green; lower part of the throat and all round the neck brown, chin becoming white; upper part of the breast very pale salmon-colour, irregularly barred across with brown, which is here and there edged with fulvous; back and wing-coverts for the most part white, but here and there showing the remains of brown plumage; lower part of the back and rump deep black; quills black, the innermost secondaries sickle-shaped, white for the greater part of their length, but becoming greyish black towards the tip; rest of the under surface of the body black, but exhibiting a brown tinge under the light; under wing-coverts varied with greyish black and white.

Adult Female. Above dark brown, everywhere covered with broad sandy or rufous edgings to the plumage, those on the lower part of the back and rump being entirely of the latter colour; crown of the head dark brown varied with rufous; sides of the face and throat sandy-coloured, speckled everywhere with tiny spots of black, of which colour are the bases of the feathers; on the lower part of the throat the black streaks are more distinct; wing-coverts coloured and barred like the back, the greater ones tipped with white, forming an alar bar; quills very dark brown, the innermost secondaries sickle-shaped, and externally edged with rufous and sandy colour, the outermost ones tipped with white, forming a second alar bar; tail dark brown, tipped with fulvous; upper part of the breast and flanks sandy-coloured, strongly washed with rufous, and conspicuously barred with black; centre of the body greyish brown, with here and there traces of black cross bars; under tail-coverts fulvous, barred with black; under wing-coverts greyish brown, with a broad white bar of white across the inside of the wing; bill as in the male; feet as in the male, but darker; iris brown. Total length 22 inches, culmen 2, wing 10·6, tail 4, tarsus 1·75.

Young Male of the previous year. Above dark blackish-brown, with a few fulvous edgings to the feathers of the back, but most of them abraded and almost obsolete, the bases of the feathers greyish white, becoming pure white in a few; feathers extending from the lores to behind the eye, encircling the latter, brown varied with white, paler than the rest of the head; below this line of feathers a very large triangular patch of black, reaching from the base of the bill to just below the eye, enclosing both cheeks and ear-coverts, and stretching far down the sides of the neck; entire throat pale brown, of a downy nature; upper part of the breast and sides of the body pale brown, barred with fulvous, darker

brown, and white; rest of the under surface of the body blackish brown; quills blackish, the secondaries sickle-shaped, with a shade of white appearing at the tip of some of the outermost; tail dark brown, washed with grey, some of the shafts yellowish.

Obs. The young male is in most respects similar to the female, but darker and less mottled and without the sandy appearance of the latter. The absence of the alar bars is another distinguishing characteristic; but the most striking character appears to be the great triangular black patch on the sides of the neck. On lifting the feathers of the back, some of them may be seen to be getting white, and this is also apparent on the throat, showing that the bird is about to change into his more beautiful plumage.

Young in down. Brown, darker on the head and lower part of the back, much paler on the upper part and slightly inclining to fulvous brown; lores and sides of the face dark brown, like the crown of the head, the cheeks a little paler; a very distinct superciliary line white; feathers on each side of the chin white, forming a triangular line; under surface of the body pale brown, the centre of the breast and abdomen silvery white.

The Eider Duck is a common bird in Northern Europe, but is perhaps more abundant in the western portion of the Palæarctic Region than in the eastern. As we shall endeavour to show presently, the American Eider constitutes quite a distinct species from the European bird; and therefore it has yet to be proved that the true Eider Duck ever occurs within American limits. We believe that in North America its place is supplied by its near ally. Regarding the range of the present species in Siberia we are also in doubt, as the recent Russian travellers do not mention the bird, and the sole authority for its occurrence in the eastern Palæarctic Region appears to be the record of Pallas to the effect that it is found on all the rocky shores of the Arctic Ocean, and is especially common near the mouths of the Jenesei and Lena rivers, but towards the sea of Kamschatka it becomes rarer, being here met with in company with the King Eider (*S. spectabilis*). Here the author says it comes in winter on the ice from America; so that it is possible that here its range coalesces with that of the American species.

In Scandinavia it is plentiful in certain localities; Mayer says it is found sometimes in winter on the coasts of the Baltic, in the Gulf of Riga. It occurs occasionally on the northern coasts of Germany; and in Denmark, according to Kjærbölling, it breeds in small numbers on some of the Danish islands, where it is protected. In Norway it is a common bird. Messrs. F. and P. Godman, in their paper on the Birds observed in Bodö during the spring and summer of 1857, state that it is the "commonest Duck about Bodö, where they are preserved for the sake of the down collected from their nests. We found some pairs breeding on a marsh by a freshwater lake, about seven miles from the sea shore;" but Mr. R. Collett says that the Eider is but a rare visitor to the neighbourhood of Christiania, occurring now and then in May or in the autumn. Mr. Gillett found it "tolerably common all along the coast of Novaya Zemlya, but did not see any large flocks of them."

Professor Newton writes as follows:—"Sufficiently numerous all round Spitzbergen, but becoming scarcer, according to Dr. Malmgren, towards the north. However, that gentleman, on the 15th of July 1861, observed at Shoal Point, lat. 80° 10′ N., flocks of hundreds of male birds, which seemed to be on their way still further north—a very remarkable fact. This species seems to be decreasing in numbers, owing to the persecution it undergoes. Messrs. Evans and Sturge,

on the Birds of Western Spitzbergen, also write:—"We found on this spot Brent Geese, Eider Ducks (*S. mollisima*), and Glaucous Gulls, in immense numbers, and the ground was covered with their nests."

In the Faroe Islands Mr. Wolley says:—

"The Eider Duck (*S. mollissima*) has of late years been provided with little houses to build in on certain islets; but the Great Gulls (*L. marinus*) still rob many of their eggs. The quantity of down procured in the Faroe Islands is very inconsiderable."

In Iceland, as is well known, it is very common; and excellent field-notes on the species as observed in this country are detailed below. Mr. Henry Milner tells us that he "found it breeding in the Eyafiord, in the north of Iceland, also at the well-known preserve near Reikiavik, in the south of the island."

The distribution of the bird in Great Britain in thus given by Mr. A. G. More:—"Lat. 55°–59°. 'Scottish' type. Not in Ireland. The Farn Islands and the Bass Rock have long been known as localities. Mr. H. D. Graham finds the Eider breeding on Colonsay and other islands in subprovince 33 [see his map]; but I do not know of any locality on the mainland of Argyleshire. Mr. St. John, in his 'Tour in Sutherland,' mentions some islands at the entrance of the Kyle of Tongue; and many different observers have met with the nest in the Outer Hebrides, Orkney and Shetland." With regard to the Bass Rock, however, Professor Cunningham states that the species has now disappeared from there. Messrs. Robert Gray and T. Anderson, in their recent volume on the Birds of Ayrshire and Wigtounshire, say that "This large and conspicuous bird is very seldom procured. It may occur much oftener than we suppose; but being strictly of marine habits, few persons have an opportunity of shooting it. So far as we can learn, it does not breed anywhere in our district." Mr. H. J. Elwes says that "it is common, though not very numerous, all over the Hebrides, from Islay to Lewis;" and Mr. Henry W. B. Milner says that when he visited St. Kilda in 1847 he found the species "common, but not in such profusion as in Iceland." In England itself the Eider gradually becomes rarer towards the south, and only occurs as an occasional visitant. Mr. Stevenson has kindly sent us the following note:—"Young males and females occur, occasionally seen near the Norfolk coast, mostly in severe winters; but it must be reckoned a rare visitant. Messrs. Sheppard and Whitear recorded an adult male as shot at Wells in June 1820, which had two others in company with it at the time. Another is said to have been shot near Cromer [Hunt's 'List of Norfolk Birds']. Another adult male was shot in Lynn estuary in November 1868—oddly enough a very mild winter. And a nearly adult male was also shot at Hunstanton, near Lynn, in February 1871, during the late severe frost. These are all the adult males I have any record of." It is occasionally shot on the southern coast; and one instance is on record of its occurrence inland in Berkshire. Only three instances of its capture in Sussex are mentioned by Mr. Knox; and in Devonshire Mr. J. Brooking Rowe records it as "scarce, but several specimens have been obtained from time to time." Mr. Gatcombe says he knows of at least five instances of its occurrence near Plymouth, but it may be considered very rare there. Only once has it been known to have been killed in Cornwall, according to Mr. Rodd.

In Holland it is only met with in winter; and in Belgium, according to De Selys Longchamps, it is "rare, and accidental on the coast during winter. One sees scarcely any but the young birds."

Degland and Gerbe write as follows:—"Occasionally seen in France during migration. A fine male in breeding-plumage was procured with others near Boulogne-sur-Mer, on the 3rd January 1831." Roux has included it in the Birds of Provence; but no mention is made of the species in the more recent work of Messrs. Jaubert and Barthélemy Lapommeraye. Bailly says that young males of the year occur on Swiss waters in the late winter when the weather is very severe.

Mr. Robert Collett has sent us the following account of the habits of the present bird:—

"The males in their summer plumage are never seen about the coast-islands after the middle of June. So soon as the females have hatched their young, the old males get tired of family life, collect together in small flocks, and then these selfish old Benedicts clear off to sea, where they spend a jolly batchelor life until late in the autumn, when they return to the land and rejoin the now full-grown young. They then frequent the very outside of the coast, where they keep on the water floating like the lightest foam.

"Their call is loud, and sounds like a long-drawn *ō ŭ ŏ*. When they fly up they generally describe a half circle against the wind; therefore when pursuing them in a boat it is always well to sail down wind. In the west and southern parts of our country they generally lay in the first week in June. The number of eggs is usually five, sometimes six, seven, and even as many as eight in some cases. The nest is generally placed under a juniper bush or a stone, and is usually amongst heather. It is merely a depression in the ground, which is filled with down, this being mixed up with small twigs, pieces of heather, &c., which cling close together, so that the entire nest can be lifted out. The down is nearly black, the shafts being somewhat lighter in colour.

"Sometimes two or three females will lay in the same nest; and in 1870 a nest was found on Renöen, an island outside Vardö, containing *fourteen* eggs. This island is preserved by the owner, so that this could not have been done by any person. It is well known that the females are so tame when incubating that one may stroke them, and they will not leave the nest.

"They often place their nests in close proximity to the fishermen's houses; and in Nordland they are often under the steps going up to the houses, or under the open passages to the rooms. When the bird flies off it almost always casts over the eggs its yellowish white excrement, and when it leaves the nest of its own accord to procure food it generally covers the eggs with down so that they cannot be seen. The worst enemies of the Eider (man excepting) are the Raven (*Corvus corax*) and Hooded Crow (*C. cornix*), particularly the latter. The Hooded Crow will sit on a stone or fence watching places where Eiders and other harmless Ducks and Waders are sitting; and no sooner do they leave their nests for a moment than down he pounces and breaks an egg with his powerful beak. So far as my experience goes, the Hooded Crow is by far the most destructive bird we have on our coasts. The Great Black-backed Gull (*Larus marinus*) also pursues the newly hatched young, and, after tiring them out, pounces on them and carries them off to some stone or suitable place and devours them. I know of an incident that occurred in July 1867, in Nordland, when a Raven (*Corvus corax*) struck down a sitting Eider Duck, and, fixing his powerful claws in her neck, tried to drag her off the nest. In this he would have succeeded; but the Eider Drake arrived home and attacked the Raven, whereupon a fight ensued between these two, which ended in both rolling, fast in each other's clutches, down the hill into the lake, where, however, the Raven got loose and flew off."

The following account of the Eider Duck in Scandinavia is taken from the well-known work on the Game-birds and Wild-fowl of Norway, by Mr. L. Lloyd:—

"The Eider Duck is very common in the Baltic, and on all the western coasts of Scandinavia, from Scania to the North Cape, but more especially on certain islands called Fugel-Vaas, or bird-preserves, on the north-west coast of Norway, where it is protected, which, until the past year or two, has not been the case elsewhere in the Peninsula, and where the eggs and down are only taken in very moderate quantities.

"Ekström seems to think there are two kinds of Eider, namely the Common and the so-called *Smal-näbbad*, or Narrow-billed Eider, spoken of by Brehm; and he is led to this conclusion from what Fabricius says of the habits of the Eider found on the coasts of Iceland, which would appear to differ materially from those of that bird frequenting the eastern 'Skärgård' of Sweden.

"It is, I believe, a commonly received opinion that the Eider in a wild state confines itself altogether to the ocean; but this would not seem always to be the case; for when, during the present autumn, I was staying with M. Strömberg at Sjöbohl, near Falkenberg, on the south-west coast of Sweden, I was assured by him that the Eider has been repeatedly shot in Ramsjön, a freshwater lake, now partially drained, in the immediate vicinity of his house, and at a distance, as the Crow flies, of some three (English) miles from the sea. He also assured me that the nest of this bird has not unfrequently been met with by himself and others in the extensive peat-bogs surrounding the lake.

"Ramsjön, it should be remarked, lies some ten to twelve feet above the level of the sea, with which (excepting by means of a canal recently cut to carry off its superfluous waters) it has no communication whatever. Its waters, nevertheless, are said to be in some degree *brackish*; and when very low a slight crust of *salt*, or of a substance resembling it, is observable on such parts of the bottom of the lake as are left dry. The Eider, like the Wild Swan and the Long-tailed Hareld, does not seem in any way affected by cold, however great it may be, and, unless the sea is entirely frozen over, remains on the coast during the whole winter. Even should it be driven thence by the ice, it is not supposed to remove to any considerable distance; for as soon as the frost breaks up it immediately returns to its old haunts. Many winter in the Danish seas, where the climate is somewhat less severe. I myself on one occasion saw myriads of these birds about Christmas time in the Little Belt, or that separating Jutland from the island of Funen.

"During the winter the Eiders keep together in very large flocks, composed as well of males as females, and at that time are exceedingly shy. Towards the spring they separate in pairs, and in April were found in our 'Skärgård' for the purpose of breeding. Until the female has deposited her eggs, the male is always in her company; but when incubation begins the males congregate, and one sees them in numbers floating, as it were, in the vicinity of the rocky islets where their mates are sitting. Subsequently, and when they begin to moult, which is in June, they keep more out at sea, and are then very difficult of approach.

"The plumage of the old male Eider varies much, according to the season of the year. Towards the autumn he loses his brilliant dress, and becomes in great part black, and is, in fact, so altered in appearance as to be hardly recognizable. The female, on the contrary, retains her brown feathers all the year round, and little difference in plumage is observable in her.

"During the daytime the Eider, unless disturbed, spends fully as much of its time on land, or rather on the cold naked rocks so common in the 'Skärgård,' as in the water, and, as it would appear, in a state of repose. What may be the case in the winter, I know not; but in the summer it would seem always to pass the night on *terra firma*; for when boating by moonlight we frequently started these birds from their roosting-places on the rocks, but never saw them on the water. If this be really the case, it would look as if the Eider, unlike most other birds of the Duck tribe, which obtain the greater part of their sustenance during the hours of darkness, feeds only in the daytime.

"Excepting from actual necessity, the Eider very rarely flies to any considerable distance from water, its natural element. Even when proceeding from one bay to another, it will follow the indentations, however sinuous, of the coast, rather than cross a headland. We are told, indeed, that, as with several other oceanic birds, 'if it accidentally loses sight of the sea, its powers of flight forsake it, and it will alight on the ground and look about in a state of bewilderment, and at such times allow itself to be taken by the hand.' When thus out of its latitude, it occasionally finds its way to very singular localities. Last autumn, when at Ellingo, in Scania, distant some twenty miles from the sea, the proprietor, Count Carl Düker, pointed out to me a small pond near the mansion, where some years before an Eider Duck had been shot by one of his people.

"This bird feeds on crustaceans and marine insects, and, some great authorities will have it, on the finny tribe as well. It may be so; but though on very many occasions we have known the Eider, when dead, to disgorge quantities of cockles, crabs, and some of these of considerable size, we were never aware of any thing in the shape of a fish. I speak of it in the wild state; for when domesticated it will eat almost any thing. It obtains its food at the bottom, at times, it is said, at a depth of twenty fathoms. To this I cannot testify; but certain it is that, even when unmolested, it remains under water a very long time.

"The weight of the male Eider, prior to pairing, and when in tolerable condition, averages near six pounds, that of the female about the same, or it may be somewhat more. The largest one ever killed did not weigh fully as much as seven pounds.

"The female forms her nest of sea-weed, fresh grass, and other coarse materials, and often in very bleak and exposed situations. Most commonly it is placed near the water, but at times a long distance from thence, and high up, say a hundred feet or more, on some rocky islet. She lines it with a quantity of the soft and elastic down from her own body, and at the end of April, or beginning of May, lays from five to six eggs, of a pale green colour, the size of those of a Goose. It happens occasionally, we are told, that two or three females deposit their eggs in the same nest, and in company sit amicably upon them. To this point I cannot speak from actual observation; but having frequently seen more than one female with the same young brood gives some countenance to the notion. In those parts of Scandinavia where this bird is protected, it is said to be so tame as to nest not only in the boat-houses, but in the very huts of the fishermen, and, whilst sitting, to allow of being handled by them. Such domesticity, however, was not found in our 'Skärgård,' where it was subject to constant persecution. In most instances, indeed, the old bird took wing when one was at all near the nest, leaving the eggs or the chicks, as the case might be, to their fate.

"Bishop Pontoppidan gives a somewhat curious account of the proceedings of the Eider during the breeding-season:—'If the first five eggs are stole away,' he says, 'then the bird lays again, but only three eggs, and in another nest; if these are lost, then she lays one more. Four weeks the mother sits alone on the eggs, and the cock stands watching underneath in the water, so that if any human creature or beast of prey approaches he gives her notice by crying *Hu, Hu*; and then she covers her eggs with moss and down, which he keeps ready prepared, and comes down to her mate in the water. But he does not receive her very kindly; and if her eggs are lost by any accident, he gives her many blows with his wings, which she must take patiently; and after this he entirely deserts her, and she is obliged to join the flock of her kind under the same disgrace.'

"It is generally supposed that so soon as the young ones are out of the shell the mother conducts them to the water; some say, however, that they remain in the nest twenty-four hours afterwards, and until they have acquired strength. But this I doubt, considering that the delay, if there be any, arises from the eggs not being all hatched, as is frequently the case, at one and the same time. From the considerable elevation at which the nest is occasionally placed, and the broken nature of the ground, it is hard to conceive how she ever gets them down to the water, it being quite certain that without aid of some kind they could never of themselves find their way there; but how their transit is effected appears somewhat of a mystery. I was assured, however, by a very respectable man, the keeper of the lighthouse at Winga, that he himself had often seen the old bird thus occupied. 'She threw the chicks over her neck, as a Fox would a Goose,' such were his very words, 'and thus carried them to their own element.'

"It is generally believed in Scandinavia that when her progeny are in jeopardy, the mother, as is said of the Merganser, takes them on her back and, either swimming or diving, thus conveys them to a place of security; but this is probably a fallacy. It is true that when the body of the old bird is submerged, which is always the case when danger threatens, and the brood are collected about her, it looks as if they were in the situation described; but in reality, I take it, they are in the act of swimming, and not resting on her. If such were the case, they must of necessity hold fast by their bills, which they clearly never do, their heads being always quite erect.

"The Eider Duck is readily domesticated, as I can state from experience, having myself reared several. When in confinement they feed freely on worms, shell-fish, and the like, on almost every thing, in short, that is given to them.

"In parts of Norway the down of the Eider forms a valuable article of commerce. That obtained from the nest, which is plucked by the bird itself from her own body, is reported to be very superior to that from the dead bird. If taken from the latter, it should be in the winter, or early spring; for in the summer and autumn, when the Eider moults, the down becomes so mixed up with blood-feathers as to be of little worth. It is stated by English naturalists, I observe, that each Eider's nest produces half a pound of down! If several birds be contributors to the same nest, this, by possibility, is the case; but individually it can hardly be; for the utmost quantity we could ever obtain from any one bird in full plumage little exceeded half an ounce.

"Though Scandinavia sends some little Eider-down to market, yet Iceland and Greenland,

according to Kjærbölling, contribute very much more. 'Every nest,' he says, 'contains about the sixth of a pound of down;' and, supposing that from each of these countries alone about six thousand pounds are annually exported, it will be seen that this is taken from 72,000 nests. As at least three fourths of the quantity comes from Greenland, and as the Greenlanders seldom allow the eggs to remain in the nest, even when half-hatched, and kill the Eider at all seasons and under all circumstances, it is inexplicable that the decrease in the number of these birds is not very considerably greater than it is.

"In Sweden and Norway the flesh of the Eider is looked on as coarse, fishy, and nearly uneatable. All the birds killed by us, nevertheless, went into the 'pot,' and were far from unpalatable, to poor people like ourselves at least, who had not always the opportunity of a good dinner."

Mr. Selby describes the breeding-habits as follows:—

"The nest is composed of fine sea-weed; and, as incubation proceeds, a lining of down, plucked by the bird from her own body, is added; this increases from day to day, and at last becomes so considerable in quantity as to envelope and entirely conceal the eggs from view, no doubt contributing, by its effect as a non-conductor of heat, to the perfect evolution of the fœtus.

"The young, as soon as hatched, are conducted to the water; and this, in some instances, must be effected by the parent carrying them in her bill, as I have frequently seen the nest placed in such situations as to preclude the possibility of its being done in any other way. Incubation lasts a month. The food of the Eider consists of the young of the different muscles that cover the rocks, and other species of bivalves. The young are reared with difficulty in confinement, and, being very bad walkers, are subject to frequent accidents in the poultry-yard. Like all the *Anatidæ*, possessing a lobated hind toe, they dive with facility, and remain submerged for a long time."

The following interesting account of this species is given by Mr. Hewitson in his well-known work on British Birds' eggs:—

"The males of this species, which spread themselves over the water in the neighbourhood in which the females are engaged in incubation, are a beautiful and highly interesting ornament of the northern seas. The Coquet, a small island at the mouth of the river of the same name, and near the Hermitage of Walkworth, is their southern boundary during the breeding-season; there they lay their eggs and hatch their young ones, close under the walls and upon the low roof of an inhabited house, where they remain quietly seated upon their nests as undisturbed by your approach as the ducks and chickens of our domestic poultry, and will scarcely be driven from thence; so completely is their roving, wild nature tamed and subdued at this season of the year by an uncontrollable and wonderful impulse. On the Fern Islands, twenty miles further to the north, they are more numerous; and although you may meet with an odd one here and there over the several islands, the bulk of them seem partial to one in particular, where are the remains of an old lighthouse, around the walls of which we found about a dozen of their nests. Some had even established themselves within, under the roof of the deserted rooms, where they were well protected from the bleak winds and rough weather by which those exposed spots are visited. Holy Island (or St. Cuthbert's Isle, as it is sometimes called), upon which there stands the beautiful Old Abbey of Lindisfarne, where dwelt in days of yore the good St. Cuthbert, is

one of this group. The Eider Duck seems to prefer the security of an island for its retreat during the breeding-season; I have, however, found several of their nests upon the Links (the sandy banks which bound the sea-beach) when in search of the holes in which the Sheldrake breeds. The Eider Duck was one of the commonest birds which we saw upon the Norwegian seas; we met with some of them upon many of the islands which we traversed, and might have collected a considerable quantity of the down. On one island, which was strictly preserved, they were in great numbers; and hundreds of male birds, beautiful in their pure black and white plumage, which were listlessly floating over a wide expanse of sea, added an indescribable interest to this otherwise desert scene. An old man who had the care of this island, and seemed to derive much pleasure from the charge, accompanied us all over his preserves, pointing out to us the ducks as they sat around us, apparently heedless of our near approach, and on quite familiar terms with our companion, who would even stroke them on the back, and was very jealous lest we should fire our guns and thus scare his pets. The Eider Duck breeds in such quantities in Iceland that their down is made an article of commerce. Sir William Hooker, in his travels in that country, says, 'Their nests were generally among the old and half-decayed sea-weed that the storms had cast high upon the beach, but sometimes only upon the bare rocks. It was difficult to make these birds leave their nests; and so little inclined were some of them to do it, that they even permitted us to handle them whilst they were sitting, without their appearing to be at all alarmed. Almost every little hollow place between the rocks is occupied with the nests of these birds, which are so numerous that we were obliged to walk with the greatest caution to avoid trampling upon them. But besides this, the Sliftsamptman has a number of holes cut in the smooth and sloping side of the hill, in two rows; and in every one of these there is a nest.' The nest of this species is at first composed of dry grass only, the whole or greater part of the eggs being laid before the down is added, which is increased during the progress of incubation, and is rendered more firm and stable by having short bits of dry grass interwoven with it. The lining of one nest, which I brought home with me, though easily compressed within my hand, when warm and expanded filled my hat, and was one ounce and five eighths in weight: the old bird, which I shot from it, did not appear to be more than half-divested of its down. In Iceland, where they are robbed two or three times successively during the season, Von Troile states that the quantity given by each Duck is half a pound—a large estimate when compared with the quantity contained in the nest of that I have spoken of, which was taken at the time the eggs were hard-sitten, and therefore contained the full quantity of down, or nearly so. The eggs of this species are five in number; but it is not an unusual thing to find ten in the same nest, the produce of two birds, which sit very amicably together. When the bird is absent the eggs are carefully covered over, no doubt for the double purpose of concealment and of warmth. The same precaution, however, is adopted when the nest contains only two or three eggs; and before the down has been added or the birds have begun to sit, and there is consequently no warmth to lose, they are carefully covered over with grass and leaves, gathered for the purpose, and sometimes fresh and green."

Mr. H. J. Elwes has kindly forwarded us the following note:—"I have usually seen the male Eider Ducks in flocks apart from the females during the winter months, and again while the latter are sitting. They prefer small outlying rocks and uninhabited islands for their

breeding-places in the Hebrides. The ducks, though not so tame as in Iceland and Norway, will usually allow you to approach within a yard or two before flying off. I am not aware that the down is anywhere collected as an article of trade, as the ducks are not sufficiently numerous, and the islets where they breed are usually difficult of access."

Mr. A. W. Johnson, of Gateshead, has also contributed the accompanying observations:—

"This bird is very common on the Farne Islands, remaining in this locality throughout the year. In the breeding-season, when the eggs are hard-set, the Ducks become extremely tame, allowing one to approach within five yards without rising from their nests, and only exhibiting their anxiety by watching our slightest movement. In winter, on the contrary, they are very wary and difficult of approach. On the 6th of June, 1870, we examined ten nests on these islands; we found them generally placed among the nettles which grow in such abundance there, no less than five out of the ten being thus situated. Two were built among the ruins of some old buildings close to the keeper's house; one was amongst the loose stones just above high-water mark, and two on the bare shelving rocks, far from any herbage, in situations similar to those chosen by *Larus fuscus*. The nests were composed of down mingled with fleshy stalks and bents, with a few feathers, the eggs generally lying imbedded in down. When the bird was flushed, we usually found the eggs in a pool of liquid excreta, and sometimes one of them thrown out of the nest by the hasty departure of the owner. The number of eggs found in any one nest never exceeded five; but in a place so much frequented as the Farne Islands no reliable data as to the number of eggs laid can be obtained; for we observed clutches of three, two, and even, in one instance, one egg hard-set. For the above reason also the time of breeding cannot be accurately stated; for, owing to the eggs having been taken by previous visitors, we found some fresh and some hard-set, though at that time there were no young ones hatched. The Drakes appeared to take no part in the duties of incubation; for in no case did we notice one on the island, nor, indeed, any nearer than the distance of a mile."

Mr. C. W. Shepherd, in his interesting little book on the North-west Peninsula of Iceland, gives the following account of a colony of the Eider Duck visited by him during his visit there:—

"After supper shooting was prohibited, as we were approaching Vigr, and Eider Ducks are nervous birds. They are protected by the laws of Iceland, and the destruction of one of them can be punished by a fine. In theory this may apply to Eider Ducks all over Iceland; but it is only put in force where the birds breed in large quantities; flocks are to be met with in all parts of Iceland's many-fjorded coast-line, in every creek and inlet; but of these no one seems to take any heed. The islands of Vigr and Œdey, both in I'sa-tjardar-djúp, are their head quarters in the north-west of Iceland; in these they live in undisturbed tranquillity. They have become almost domesticated, and are found in vast multitudes, as the young remain and breed in the place of their birth. If they are persecuted, however, they soon regain their wild state, and would leave their home for some other more retired retreat; nor would they have far to go, for a new home could be found in every fjördr.

"We had now time and opportunity to look about us and enjoy the scenery. The general appearance of the fjördr is not so grand to a person journeying up as to one coming down, the mountain-scenery not being so bold or so lofty at the head as it is at the mouth of the fjördr. There was a little rain on the journey; but before we reached Vigr a neighbouring mountain had

appropriated the cloud for its nightcap, and all was fair above. The wind was calm and the water quite smooth as the island was approached; and we could see flocks upon flocks of the sacred birds, and could hear their cooings at a great distance. At 3 A.M. we landed on a rocky wave-worn shore, against which the waters scarcely rippled, and, leaving the rowers in charge of the boat, set off to investigate the island. The shore was the most wonderful ornithological sight conceivable. The Ducks and their nests were everywhere, in a manner that was quite alarming. Great brown Ducks sat upon their nests in masses, and at every step started up from under our feet. It was with difficulty that we avoided treading on some of the nests. The shore only is thus infested. The interior of the island was covered with good grass, and we surprised a body of young maidens who were engaged in haymaking. Frightened at our approach, they were hurrying away, when Clausen assured them that our visit was peaceable.

"The island being but three quarters of a mile in width, the opposite (or southern) shore was soon reached. On the coast was a wall built of large stones, just above the high-water level, about three feet in height, and of considerable thickness. At the bottom, on both sides of it, alternate stones had been left out, so as to form a series of square compartments for the Ducks to make their nests in. Almost every compartment was occupied; and as we walked along the shore a long line of Ducks flew out, one after another. The surface of the water, also, was perfectly white with Drakes, who welcomed their brown wives with loud and clamorous cooing. When we arrived at the farmhouse, we found that the haymakers had apprised their mistress of our approach. She gave us a cordial welcome. The house itself was a great marvel. The earthen walls that surrounded it, and the window embrasures, were occupied by Ducks; on the ground the house was fringed with Ducks; on the turf slopes of the roof we could see Ducks; and a Duck sat in the scraper.

"A grassy bank close by had been cut into square patches like a chessboard—a square of turf, of about 18 inches, being removed and a hollow made; and all were filled with Ducks. A windmill was infested, and so were all the outhouses, mounds, rocks, and crevices. The Ducks were everywhere. Many of them were so tame that we could stroke them on their nests; and the good lady told us that there was scarcely a Duck on the island which would not allow her to take its eggs without flight or fear. On entering the house we were shown into a little room whose furniture was very grand for Iceland. Four maidens soon came in, each bearing a large bowl of milk; each in turn approached the table, and taking a sip from her bowl placed it before us. Our hostess told us that when she first became possessor of the island the produce of down from the Ducks was not more than 15 lbs. weight in the year, but that under her careful nurture of twenty years it had risen to nearly 100 lbs. annually. It requires about $1\frac{1}{2}$ lb. to make a coverlet for a single bed; and the down is worth from 12*s.* to 15*s.* per pound. Most of the eggs are taken and pickled for winter consumption, one or two only being left to hatch."

The following extract is taken from Mr. Crowe's Consular Report from Iceland, reproduced in 'Land and Water' for February 1867:—

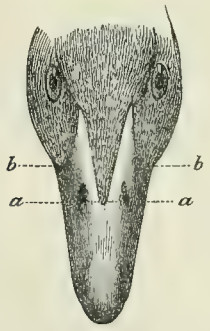
"As the bird is protected from molestation by severe laws, it has become tame, and always repairs to the same spot to hatch its young. As soon as the eggs are laid, the owners of the hatching-grounds rob the nests of the down and a part of the eggs, both of which the poor bird replaces a second and third time, when she is left to complete the process of incubation, but with

her body completely denuded of down. This method of procuring it is had recourse to because the down of the dead bird loses its elasticity, and is of comparatively little value. The hen bird gives from eight to nine ounces of down to a nest; but when cleansed this weight is diminished by half. The value of the uncleaned down is about 8*s*. a pound, and the cleaned down about 19*s*. the pound. The annual produce is about 6000 pounds weight of down, valued at about £5000. Sometimes one little holm will give its owner an annual income of £150; and such is the care taken of these useful birds that during the hatching-season no guns are allowed to be fired in their vicinity, and foreign vessels arriving are forbidden to fire salutes for the same reason."

As there is great difficulty in recognizing the females of the common Eider Duck and the King Eider, we quote the following remarks, recently published by Mr. J. Edmund Harting in his paper on the Barrow collection at Oxford (P. Z. S. 1871, p. 118); and we herewith acknowledge our obligation to the Zoological Society for allowing us the use of the woodcut which accompanied the author's remarks on the above-mentioned occasion. Mr. Harting observes:—

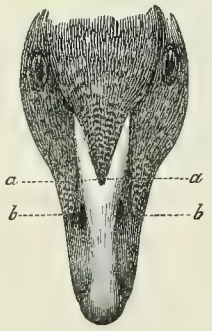
"The female of the King Duck, although as a rule somewhat smaller and redder, so closely resembles the female of the Eider, as to be with difficulty recognized except by comparison. A good mark of distinction, however, is the relative position of the ridge of feathers which runs down the centre and each side of the bill. In the Eider the centre ridge (fig. 2, *a a*) is shorter than the lateral ridges *b b*; in the King Duck (fig. 1) the reverse is the case."

Fig. 1.



Upper surface of bill of King Duck.

Fig. 2.

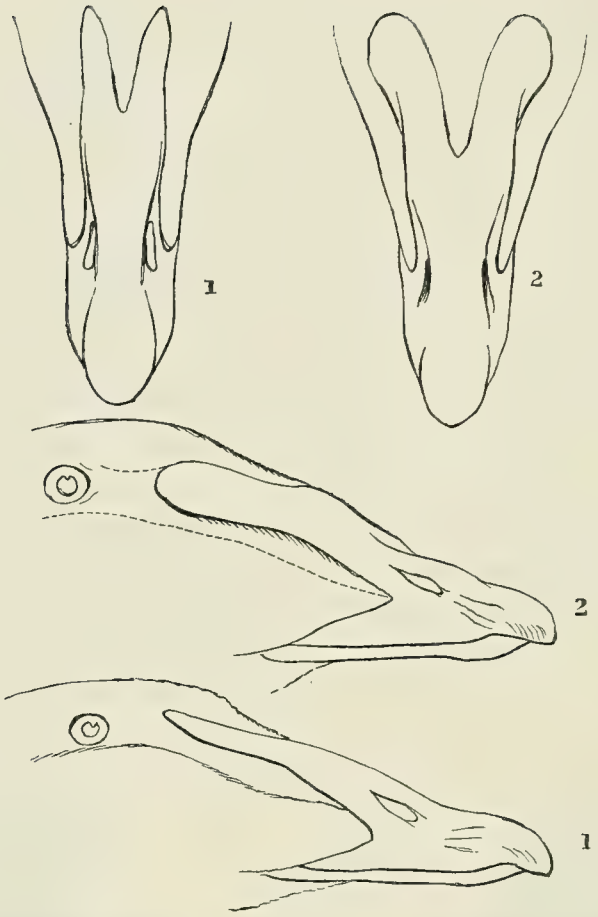


Upper surface of bill of Eider Duck.

Eider Ducks vary according to locality. Thus Professor Newton writes:—

"Scoresby remarks on the small size of the Greenland Eiders; and, in his last publication, Dr. Malmgren has some remarks on the same subject. He gives a table showing that the dimensions of the bill in four examples from Spitzbergen are constantly less than in three from the Baltic. There is, however, no difference in the plumage of the birds from the two localities. He states that examples procured by Herr Meves on the coast of Holstein in winter resemble those from Spitzbergen more nearly in the form of the bill, but differ by being larger in body. I unfortunately did not bring home any Spitzbergen specimens; I am therefore unable to test these observations."

We have already called attention to the distinction of the Eider Duck of America from the European bird; and the accompanying woodcut will best serve to illustrate the differences between these two *Somateriæ*.



1. Head of *Somateria mollissima*. 2. Head of *Somateria dresseri**.

The American Eider is altogether larger, and has the sickle-shaped secondaries much more developed. The sea-green colour of the neck spreads over the cheeks, and even the nuchal line is tinged with this colour; but the most striking difference is in the bill, which is deeper and has the bare surface of the cere more rough and rugose than in the European species.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a, b. Aberdeenshire (*W. C. Angus*).

E Mus. Salvin and Godman.

a, b. Bodo, Norway (*F. Godman*).

E Mus. J. H. Gurney, jun.

a. ♂. Stromness, April 11th, 1867 (*J. H. G.*). *b.* ♂ (in change). Orkney, November 5th, 1870. *c.* ♀. Haroldswick, Shetland, June 20th, 1868 (*Saxby*). *d.* ♂ *juv.* British Channel, January 7th, 1868. *e.* (young in down). Lyra Bay, in Stromness, July 1867.

* The description of this species was communicated by Sharpe to the 'Annals and Magazine of Natural History' for July 1871.



KING EIDER.
SOMATERIA SPECTABILIS

SOMATERIA SPECTABILIS.

(KING EIDER.)

The Grey-headed Duck, Edw. Nat. Hist. Birds, iii. p. 154, pl. 154 (1750).
Anas freti-hudsonis, Briss. Orn. vi. p. 366 (1760).
Anas spectabilis, Linn. Syst. Nat. i. p. 195 (1766).
Canard à tête grise, Buff. Hist. Nat. Ois. ix. p. 253 (1783).
Bering Goose, Lath. Synop. iii. p. 465. no. 24 (1785).
Anas beringii, Gmel. Syst. Nat. i. p. 508 (1788, ex Lath.).
Somateria spectabilis (L.), Boie, Isis, 1822, p. 564.
Platypus spectabilis (L.), C. L. Brehm, Lehrbuch Naturg. eur. Vög. ii. p. 816 (1824).
Fuligula spectabilis (L.), Bp. Synops. p. 389. no. 332 (1828).
Somateria megarhynchos, C. L. Brehm, Vogelfang, p. 389 (1855).
Somateria altensteini, C. L. Brehm, Vogelfang, p. 389 (1855).

Canard à tête grise, French; *Prachtente*, *Pracht-Eiderente*, German; *Pragt-edder-and*, Danish; *Eave kongur*, Færoese; *Siorakitsok*, ♂ *Kingalik*, ♀ *Kaiortok*, *Arnauiartak*, Greenlandic; *Æðurkóngur*, Icelandic; *Pragt-Edderfugl*, *Spitsbergs-Edderfugl*, Norwegian; *Prakt-Ejder*, Swedish; *Pulska-haakka*, Finnish; *Pistrak*, Russian.

Figuræ notabiles.

Edwards, Nat. Hist. B. pl. 154; Werner, Atlas, *Palmipèdes*, pl. 47; Kjærb. Orn. Dan. taf. 49; Naumann, Vög. Deutschl. taf. 322. fig. 2, and taf. 323; Sundevall, Svensk. Fogl. pl. 60. figs. 3, 4; Gould, B. of Eur. pl. 375; id. B. of G. Brit. v. pl. 27; Audub. B. of Am. pl. 404.

♂ *ad.* pileo et nuchâ cæruleo-canis, capitis lateribus pallidè viridibus, gibbo maximo ad basin rostri centraliter striâ nigrâ notato et nigro marginato: dorso antico, tectricibus alarum centraliter et plagâ magnâ utrinque in uropygio albis: corpore suprà reliquo, alis et caudâ nigris: remigibus secundariis falcatis: gulâ albâ, maculâ nigrâ posticè bipartitâ notatâ et vittâ suboculari nigrâ: gutture et pectore superiore ochraceo-isabellinis: corpore reliquo subtùs nigro: rostro rubro, gibbo aurantiaco: pedibus rubro-aurantiacis, membranâ natatoriâ nigricante: iride fuscâ.

♀ *ad. Somateriæ mollissimæ* similis sed minor, coloribus saturatioribus, rostro usque ad nares plumato.

Adult Male (Greenland). Crown and nape pale ashy blue, this colour extending along the side of the head in a line from the eye; sides of the head otherwise pale green; a large protuberance on the upper mandible, over the centre of which is a line of black feathers continued broadly on each side down to the gape; a black spot under each eye and a large black V-shaped mark from the chin along the sides of the upper throat; upper part of the back, central portion of the lesser wing-coverts, and a large patch on each side of the rump pure white; rest of the upper parts, tail, and wings black; the inner secondaries rather elongated and curved outwards; upper throat pure white; lower throat to

the upper breast warm cream-colour, rest of the underparts black; bill red, the nail yellowish, and the naked protuberance on the upper mandible bright orange; feet dull orange-reddish; the webs blackish; iris dark brown. Total length about 21·5 inches, gape 2·35, wing 10·3, tail 3·5, tarsus 1·7.

Adult Female (Archangel, 15th September). Resembles the female of *Somateria mollissima*, but is smaller, rather darker in general coloration, and may easily be distinguished by the central line of the feathers on the upper mandible running quite down to the nostrils, whereas in *Somateria mollissima* it does not reach halfway.

Young Male (Arctic America). Head, neck, and upper breast as in the female, but the swelling on the bill is just beginning to show; the back, upper parts generally, and rest of the underparts are as in the old male, but are duller, the white is patchy, and the upper parts are a little varied with brown.

Young in down. According to Von Middendorff the young in down closely resembles that of the common Eider, but is lighter and more yellowish grey above; but even in this plumage the young of the two are distinguishable by the form of the down-covered portions at the base of the bill.

The present species, like the common Eider, inhabits the northern portions of Europe, Asia, and America, straggling southward during winter; but it is found further north than *Somateria mollissima.*

It only appears in Great Britain as a rare straggler; and it is doubtful if it has ever remained to breed with us. Bullock, it is true, told Montagu that he found it breeding in Papa Westra, one of the Orkney Islands; but no subsequent ornithologist or collector has ever found it breeding there, and it is almost certain that he was mistaken. In Scotland it is of very rare occurrence. Dr. Saxby expresses doubt as to whether it should be included in the list of Shetland birds, and, referring to the record of one stated by Mr. Dunn to have been obtained at Wensdale Voe, near Hoy, Shetland, remarks that there is neither a Wensdale Voe nor a Hoy in Shetland, but that there is a well-known island called Hoy in Orkney. Mr. Gould exhibited one obtained in Orkney at a meeting of the Zoological Society in November 1832; and Mr. E. Hargitt has lent me for examination a female shot by himself in Orkney in May 1868.

According to Mr. St. John it is seen rarely at the entrance of the Kyle of Tongue; and Mr. Robert Walker has published in the 'Scottish Naturalist,' April 1873, some interesting notes respecting the occurrence of a small flock in St. Andrews Bay and the mouth of the Tay, from which I extract the following, viz.:—"On the morning of the 6th of March, 1872, I saw a number of Ducks swimming about opposite the old castle of St. Andrews. At first I took them for Eiders, as this is rather a favourite place for that bird; and although somewhat surprised at their early appearance, I was inclined to ascribe this to the mildness of the past winter. They were a considerable way out at sea, and seemed to me to consist of five females and two males. After watching closely for some time, it struck me forcibly that there was something or other in their appearance and attitudes that I could not quite reconcile with my previous acquaintance with the manner of the Eider Duck. Still at the time, and even yet, I could not define precisely what the difference really was; further (and this to some extent supplemented from what I afterwards saw of them), they seemed to be quicker in their movements, and exhibited a more restless unstable-like behaviour than is the custom of the 'Dunter.' I could not be positively certain of seeing these Ducks again for some days. One morning, however, about a week afterwards, I

had a good sight of them as they were apparently busy feeding on the young mussels that occur in some abundance outside the rocks on the north of St. Andrews. I could only count six birds this time; but, as they were diving and remaining a considerable time under the water, there may have been more of them. From their general appearance, and the view I then had of the dark colour of the backs of the males, I felt absolutely certain they were King Ducks. Although I continued to see these Ducks occasionally (or at any rate what, from the distance, I took for them) until the end of the first week in April, they were, with one exception, always so far out at sea that it was impossible to make any thing of them. This was the mouth of the Eden, where I came upon them somewhat unexpectedly as they were quietly swimming about amongst a number of Eiders, with which they were evidently associating in the most friendly manner. I could only, of course, be sure of the identity of the males. The females of the King and Eider Duck seem to me to resemble each other so closely that I should say it would be next to impossible to distinguish the one from the other when seen at a distance. About the middle of April I heard that one or two King Ducks had been shot in the Tay; but beyond that I could neither see nor learn any thing of these birds or their whereabouts, and ultimately concluded that they had gone off. In this, however, I was mistaken; for on the 29th April a fine male, in splendid adult plumage, was killed in the estuary of the Tay. The bird is in my possession, and was examined by me while in the flesh. Mr. Patrick Henderson, Dundee, who also saw these Ducks in the Tay last spring, has kindly informed me that other three specimens were killed in the estuary of that river in March last. All these birds were seen and examined by himself. He states that they were all females, but that he was once within thirty yards of a fine male, but could not procure it. One of the above-mentioned Ducks was shot by Mr. Ross, another by Captain Campbell, and a third by Mr. John Nelson, Dundee, to whose kindness I am indebted not only for sending the particulars of the case, but for forwarding the bird itself for my inspection. He says that on the 16th of March last he was in a boat on the river, about three miles below Tayport, and shot it while it was flying past him, at a distance of about seventy yards, going up the water."

It occurs very sparingly on the coasts of England. Mr. Hancock says that one which was shot near the Farn Islands on the 14th November, 1873, is in the possession of F. Raine, Esq., of Durham; but one that was recorded (Zool. 1851, p. 3036) as having been obtained at Bedlington, in Northumberland, in 1846, was, he finds, really shot at Bridlington Quay, Yorkshire, and not in Northumberland. He further adds that a pair were seen in the neighbourhood of the Farn Islands during the summer of 1873. One was shot at Breydon Harbour, Norfolk, on the 25th July, 1813, and one at Aldborough, in Suffolk, in 1827; but it is questionable as to whether one recorded as having been obtained at Lowestoft in January 1854 was really a King Eider. The last specimen I find recorded as having been obtained in England is one purchased by Mr. J. H. Gurney in Leadenhall market in November 1870.

According to Thompson several examples have been obtained in Ireland, the following being the occurrences enumerated by him, viz.:—one shot at Kingstown Harbour, near Dublin, on the 1st October, 1837; one from Derrynane, in the winter of 1843, and one from Tralee Bay, in that of 1845–46, in the possession of Mr. R. Chute; and one, a female, shot in Belfast Bay on the 11th of March, 1850, was examined by Mr. Thompson in the flesh.

It is stated to be tolerably common in the northern parts of Greenland. According to Professor Newton it is said not to breed further south than lat. 62° N., but in some numbers at lat. 73°. It is also found on the east coast of Greenland and on the western shores of Davis's Strait, and breeds abundantly on the Parry Islands. Professor Newton, in the appendix to Baring Gould's 'Iceland,' says that it is "by all accounts a rare bird in Iceland, and generally only a straggler from Greenland or elsewhere. Yet Faber says that a pair bred on Viðey in 1819 and 1820 among the multitudes of the common Eider. He only mentions, besides, the occurrence of one at Hofsaas a few years before his visit, and one washed up dead at Eyrarbakki, December 25, 1820. Mr. Baring Gould was shown a skin of this bird at Akureyri." In the Færoes it is said to occur, singularly enough, during the summer; but it has not with certainty been known to breed there. It is a straggler to the coasts of Scandinavia. Mr. Robert Collett informs me that "it has not yet been found breeding in Norway, but visits the northern portions of the coast every winter in larger or smaller flocks, being much more numerous in some years than in others; and sometimes it may be met with in all the larger fiords and off most parts of the coast of Finmark. The Christiania University Museum lately received several King Eiders in the flesh, both old and young, from near Tromsö, where they are usually found in January and February, and are, as a rule, somewhat shy. The fishermen know this Duck by the name of 'Spitsbergs Edderfugl,' and say that a few young males occasionally remain there over the summer, but never have any old ones been seen there at that season." Pastor Sommerfelt states (Öfv. K. Vet. Ak. Förh. 1861, p. 88) that it is most certainly not a common bird in East Finmark, and Schrader was doubtless mistaken in stating that it was. In the large flocks of Eiders that range about in the late autumn the common Eider is by far the most numerous, Steller's Ducks form a not inconsiderable portion, but the King Eider is, compared with the other species, very scarce. Nilsson says that he has received it from the shores of Östgöthland, and, according to Mr. Lundborg, four were shot in April off Kalmar. It is found in Finland. Dr. Palmén states that, according to Fellman, it has been seen and shot in Utsjoki and Enare, and on the south coast near Helsingfors it is met with annually. It has occurred at Kotka, near Borgå, Sibbo, Enskär, Esbo, Kyrkslätt, and Porkkala, and frequently in the early spring on Åland, in the parishes of Kökar and Föglö. According to Mr. Grönfeldt it has been observed near Björneborg, but is not otherwise recorded from the Gulf of Bothnia. In the north of Russia it appears to be rather scarce; but I have received examples from near Archangel, and it is found in Novaya Zemlya and Spitsbergen. Mr. G. Gillett writes (Ibis, 1870, p. 309) as follows:—"In Matthew's Straits on the 6th August I saw several of these birds in small flocks, all apparently immature males. I shot two specimens: their wings were entirely destitute of quill-feathers, so that they could not fly; but they dived in a wonderful way, and were very difficult to get. They were apparently full-grown, but were dark brown on the head and back and blackish in places. The protuberance on the bill was of a rich orange, shading off on the bill itself to a pinkish flesh-colour; the irides dark." It would appear to be rare rather than otherwise in Spitsbergen. Professor Malmgren says that he is certain that it is not found breeding on the coasts above 79° 5′ N. lat., as they have been fully explored. The only reliable data respecting its occurrence there are, he says, as follows, viz.:—Professor Lovén informed him that he saw it in the Isfjord in 1837; Professor Nordenskjöld says that two females were shot

on his expedition in 1858; and Professor Sundevall saw several young males and females in Bellsund in 1837, but no males. Professor Malmgren himself obtained one, shot out of a small flock early in July at Safe Haven. Another little flock was observed by him in August on the Horn-Sound Islands; but in the south-east harbour of Bear Island, on the 18–19th June, he saw a very large flock, consisting of hundreds of ducks and young drakes, with only one or two old drakes amongst them all. In the Baltic it is of very rare occurrence. Borggreve says that Boeck obtained a female on the coast of Pomerania in the winter; and, according to Professor Münter an adult male in full plumage was shot on the island of Rügen on the 28th March, 1853, by Mr. Bohnsack. Kjærbölling only records one instance of its occurrence in Denmark, viz. that of a young male, now in Mr. Carstensen's collection, obtained at Copenhagen on the 19th April, 1849. Mr. J. C. H. Fischer, of Copenhagen, however, informs me that two were obtained in the winter of 1864–65—one, a young male in change, received about the middle of February from Kallundborg by Mr. Benzon, and an old female purchased in the flesh by Mr. Scheel on the 30th of March, the latter being now in Mr. Fischer's collection. It does not appear to have been obtained on the coasts of Holland or Belgium; but Messrs. Degland and Gerbe say that it appears accidentally on the coasts of France, and that one was killed at Boulogne.

In Asia, as in Europe, it is found only in high latitudes, where it does not appear to be very rare. Von Middendorff observed it on passage on the Boganida on the 6th June in 70° N. lat. On the 16th the first pairs were seen on the Taimyr in $73\frac{3}{4}$° N. lat.; and soon after, large flocks appeared. On the 25th June he found a nest with fresh eggs, and on the 24th June (July?) he met with the young in down. Early in August many females were seen swimming down the river with their young, evidently making for the sea.

On the American continent the King Eider is tolerably common in the northern portions of the British possessions, but appears to be more numerous on the eastern than on the western side of the continent. In Alaska it is said to be rare. Mr. Dall found one dead on the beach near the rapids of the Yukon river; and he observed it in winter at Unalashka. M'Farlane found it breeding at Franklin Bay, in the Arctic ocean; and Captain H. W. Feilden, who met with it on the late Arctic expedition, writes to me:—"It extends its northern range beyond that of *Somateria mollissima*. In July a few pairs visited the coasts we travelled over between the 82° and 83° N. lat. in Grinnell Land; and I obtained two or three nests in the vicinity of our winter quarters, in 82° 27′ N. lat."

It is found in Labrador and on the coasts of Canada and New Brunswick. I was never fortunate enough to see it when shooting on the shores of the Bay of Fundy; but Mr. G. A. Boardman informs me that it has been seen off the coasts of Maine all the summer, but is usually met with as a rare winter straggler.

In the United States it is, Dr. Coues says, found chiefly on the coast, and ranges during severe winters south to New Jersey, occurring in the interior to Lake Erie. Dr. Brewer informs me that "it usually occurs so far out at sea that it is only rarely brought to market. Numbers are found about Nantucket Bay throughout the winter up to April. It has been taken in Lake Erie, near Buffalo; and specimens from Niagara and Illinois are in the Smithsonian Museum."

In habits the present species is said to differ but little, if at all, from the common Eider,

and its mode of nidification resembles that of that species. It frequents the coast, and is generally met with far out, except during the breeding-season, and is, moreover, very seldom seen on inland waters. Its food consists chiefly of shell-fish of various kinds. Mr. Thompson, who examined the stomach of a female shot in Belfast Bay, says that it "was filled with the remains of crustacea and mollusca, viz. an *Inachus* of middle size, the largest *Portunus arcuatus* that I had seen (and perfect excepting the arms), a *Nucula margaritacea*, and a small buckie whelk (*Buccinum undatum*)." Mr. Collett informs me that he dissected a couple of adult males shot at Tromsö in January 1877, and found their stomachs full of mollusca, chiefly of *Pecten islandicus*, *Cyprina islandica*, and *Mytilus modiola*: some of these were broken; but in one of the birds he found five uninjured specimens of *P. islandicus*, the shells of which measured more than an inch in diameter; and in the ventriculus there were several entire examples of the same species.

I have examined a fine series of eggs of the present species obtained by Captain Feilden in 82° 27′ N. lat., and have several in my own collection from North Greenland. All these resemble the eggs of the common Eider in shape and coloration, but are less in size, measuring from $2\frac{19}{40}$ by $1\frac{28}{40}$ to $2\frac{23}{40}$ by $1\frac{35}{40}$ inch.

The specimens figured are the adult male and female above described, and are both in my own collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂, *b*, ♀. Archangel, September 15th, 1873 (*Piottuch*). *c*, ♂, *d*, ♀. Greenland (*Erichsen*). *e*, ♂ *ad.* Franklin Bay, Arctic America, July 5th, 1864 (*M'Farlane*). *f*, ♂ *juv.*, *g*, ♀. June 30th, 1863, Arctic America (*M'Farlane*).

E Mus. Howard Saunders.

a, ♂ *ad.*, *b*, ♂ *juv.* N.W. Iceland (*Proctor*).

E Mus. E. Hargitt.

a, ♀. Stromness Harbour, Orkney, December 11th, 1869 (*J. H. Dunn*). *b*, ♀. Near Stromness, May 22nd, 1868 (*E. Hargitt*).



SOMATERIA STELLERI.

XXIV.

SOMATERIA STELLERI.

(STELLER'S DUCK.)

Anas stelleri, Pall. Spic. Zool. fasc. vi. p. 35, tab. v. (1769, descr. orig.).
Anas dispar, Sparrm. Mus. Carls. no. vii. (1786, descr. orig.).
Clangula stelleri, Boie, Isis, 1822, p. 564.
Anas occidua, Bonn. et Vieill. Encl. Méth. i. p. 130 (1823, descr. orig.).
Fuligula dispar, Steph. Gen. Zool. xii. p. 206 (1824).
Macropus stelleri, Nuttall, Man. Orn. U. S. ii. p. 451 (1834).
Polysticta stelleri, Eyton, Hist. Rarer Brit. B. p. 79 (1836).
Stellaria dispar, Bonap. Comp. List of B. of Eur. & N. Am. p. 57 (1838).
Eniconetta stelleri, Gray, List of Gen. of B. p. 95 (1840).
Harelda stelleri, Keys. & Blas. Wirb. Eur. p. 230 (1840).
Heniconetta stelleri, Agass. Ind. Univ. p. 178 (1846).
Somateria stelleri, A. Newton, P. Z. S. 1861, p. 400.

♂ pileo toto et collo postico purissime albis: linea frontali cum macula lorali et fascia occipitali viridibus: regione oculari, gutture toto, torque collari et dorso toto saturate purpureo-nigris: scapularibus elongatis nitide purpureo-nigris, albo marginatis, plumis omnibus ad basin albis: tectricibus alarum superioribus omnibus albis: remigibus brunnescenti-nigris, secundariis purpureo-nigris, albo marginatis, pennis dorsalibus falciformibus versus apicem conspicue albis: cauda nigra: torque angusto collari et collo laterali albis: corpore subtus læte ferrugineo, pectore medio cum abdomine et subcaudalibus nigris: corpore laterali fulvo: tibiis brunnescentibus: pectore superiore lateräli maculis duabus purpureo-nigris distinctis notato: subalaribus albidis, margine alari brunnescenti vario: rostro plumbeo.

♀ brunnea, pileo paullo olivascente, rufo vix notato: capitis lateribus et collo postico fulvescenti-rufo, brunneo indistincte transfasciato: dorso saturate brunneo et rufo vario, plumis fulvo marginatis: tectricibus alarum brunnescentibus, cineraceo lavatis: majoribus albo terminatis: remigibus brunnescenti-nigris, secundariis purpureo-nigris albo terminatis, pennis dorsalibus ad apicem dilatatis, pogonio interno cinereo lavato: cauda brunnea: gutture toto fulvescenti-rufo: collo inferiore albo et nigro vario: pectore superiore et corpore laterali castaneis, nigro marmoratis: pectore inferiore cum abdomine et subcaudalibus nigricantibus, his castaneo tinctis: subalaribus albis, margine alari brunneo.

♀ *jun.* brunnea, pileo paullo rufescenti transfasciato: dorsi plumis obsolete rufo marginatis: tectricibus alarum brunneis, majoribus albo terminatis: remigibus brunneis, purpureo vix nitentibus, secundariis albo terminatis: corpore subtus rufescente, gutture sordide fulvo, pectore reliquo fasciis obsoletis nigricantibus ubique vario: subalaribus albidis.

Adult Male. Top and sides of the head and a collar encircling the back of the neck silky white; a narrow line across the forehead, a loral spot, and an occipital patch of feathers, forming a slight crest, dull olive-green; feathers of the throat, narrowing gradually to a line which divides the white collar and joins another broad one which encircles the neck, glossy blue-black with a purple lustre in some lights,

as also are the feathers round the eye and a small spot on each side of the green occipital band before mentioned; entire back deep blue-black, also glistening with purple; scapulars long and lanceolate, bluish purple, edged with white along the margin of the feather; all the upper wing-coverts pure white; quills brownish black, the secondaries bluish purple, tipped with white, forming a distinct alar bar, the innermost feathers sickle-shaped, and very distinctly tipped with white; tail brownish black; a narrow collar encircling the upper part of the breast and broadening out on the sides of the neck white; under surface of the body deep ferruginous, inclining to buff on the upper breast and sides of the body; middle of the breast, abdomen, and under tail-coverts deep black; sides of the upper breast marked with two very distinct spots of purplish blue; under wing-coverts white, varied with brown along the edge of the wing; bill lead-coloured, with the nail rather lighter; feet greyish brown, with rather a darker web; iris brown. Total length 18 inches, culmen 1·45, wing 8·4, tail 3·5, tarsus 1·2.

Adult Female. Head olive-brown, with a faint gloss of purple in some lights, slightly mixed with rufous and marked with black; cheeks, sides of the neck, and an indistinct collar encircling the latter fulvous, transversely mottled with black; entire back dark brown, mottled with rufous, the feathers for the most part edged with fulvous; scapulars dark brown, washed with dull rufous; wing-coverts dark brown, washed with olive-brown and tipped with white, forming a distinct alar bar; quills blackish, the secondaries purplish blue, tipped with white, forming a second alar bar, the innermost feathers broadened out towards the apex and slightly curved, the inner web clearly washed with grey; tail dark brown, greyish underneath; throat rufescent, mottled obscurely with little marks of brown; upper breast rich chestnut, very distinctly mottled with pear-shaped black markings; lower part of the breast, abdomen, and under tail-coverts black, obscurely marked with chestnut, more distinct on the latter; flanks chestnut, barred with black; under wing-coverts for the most part white, the feathers along the edge of the wing brown, edged with white. Total length 19 inches, culmen 1·6, wing 8·3, tail 3·6, tarsus 1·2.

Young Male. Similar to the old male, but having the white upper wing-coverts marked with brownish edgings to the feathers; the flank-feathers nearest the back are also marked with greyish, and the black on the belly is not so deep.

Young Female. Similar to the old female, but at once distinguished by the absence of black on the lower breast and abdomen, the whole of which parts are black with very broad chestnut edgings to the feathers, so that the ground-colour of the feather is hardly seen; the upper part of the breast also is coloured like the rest of the under surface of the body, without any of the rich chestnut so conspicuous in the old bird: on the upper surface the young bird is not so conspicuously barred as the adult: the two white alar bars are present; but the secondaries are all brown with a slight purple gloss.

The present species is an inhabitant of the Northern Palæarctic Region, breeding in the highest latitudes. In Western Europe it occurs more sparingly, and has only twice been shot in England. Respecting the history of the two British-killed examples we have been favoured with the following note by Mr. J. H. Gurney, jun., who writes as follows:—

"The following is all that is known about the Steller's Duck which was got at Yarmouth. It was shot on the 10th of February, 1830, at Caistor (formerly written Castre, an old Roman encampment). Yarrell records it in the following words in the 'Magazine of Natural History' (vol. iv. p. 117):—'A male of this beautiful species was shot by a collector near Yarmouth, and is now in the possession of a gentleman at Acle.' He says nothing, however, about Acle in his

'British Birds' (1839); and according to the notes supplied by Mr. Clarke to Mr. Stevenson, it was Harvey who obtained the bird. This Harvey was a bird-preserver and gamekeeper, to whom the greater number of wildfowl shot about Breydon were brought, and who, according to Messrs. Paget, was in the habit of sending up to Leadenhall and Hungerford Markets 1000 head of wildfowl per annum. Anyhow, it was soon after presented by the Rev. G. Stewart, Rector of Caister, to the Norwich Museum, where I lately saw it. It is a male bird, and, of the eight or ten Steller's Ducks preserved there, is the finest specimen; several pictures have been made of it. Strange to say, no notice is taken of the Norfolk bird in Newman's edition of Montagu's 'Dictionary;' but a second occurrence at Filby [*lege* Filey], in Yorkshire, is mentioned."

We need hardly say that the supposed occurrence of Steller's Duck in the Island of Arran, where it was said to have been obtained on the 11th of June, 1847, is utterly unworthy of credence.

Steller's Duck has only occurred in France once, as we are informed by Messrs. Degland and Gerbe. "In February 1855, M. Lefevre procured a female killed at Audingon, a village distant eight kilometres from Marquise, between Calais and Boulogne." It has been obtained by Gätke in Heligoland, and is sometimes killed in North Germany, occurring, according to Borggreve, often near Dantzig. In Denmark Kjærbölling records its capture on two occasions: the first, a fine male, was procured in the winter of 1829–30 by Mr. Archiverius Winther from some fishermen at Gilleleie, who caught it in their nets; and by him it was presented to the Royal Museum. According to Steenberg, an old female was shot at Helsingoer on the 17th of January, 1849.

With regard to its occurrence in Scandinavia we quote the following remarks from Nilsson's well-known work:—

"During migration it sometimes occurs on the islands and shores of the Baltic, occasionally as far south as Skåne. . . . . It has more often been procured on Göthland and on the coasts of Östergöthland and Södermanland, especially near Landsort in the latter locality, according to the Rev. Mr. Ekström. It arrives early in spring (certainly from the south) in company with the stragglers of the Long-tailed Duck, which appear first. From this circumstance it is called by the shore-gunners Alförrådare, the Pilot or Messenger (*lit.* Traitor) of the Long-tailed Duck. Higher up in the Baltic, in the Finnish Islands (for instance, about Åland), it is said not to be rare."

Mr. Robert Collett, of Christiania, writes to us:—"This Duck occurs annually on the Lapland coast, where, however, it does not breed regularly, but is still to be seen during the summer at the mouths of the rivers close to the sea. It feeds on mussels."

In the 'Proceedings' of the Zoological Society of London for 1861 (p. 400), Professor Alfred Newton has figured the egg of the present species; and we here transcribe his notes verbatim:—

"To the same kind friend, Dr. Baldamus, I owe the opportunity of figuring the egg of this bird, which is one that he received from Von Middendorff, who states (Sib. Reise, II. ii. pp. 234, 235) that he discovered it breeding on the flat 'tundras' of the Taimýr. On the 25th of June the nests found contained from seven to nine newly laid eggs, of which he gives in his work representations of three specimens (tab. 23. figs. 3–5).

"I may perhaps be allowed to add that, towards the end of June and in July 1855, when in

East Finmark in company with Mr. W. H. Simpson and the late Mr. John Wolley, we saw several small flocks of this species at various places along the Varanger Fjord, but we could never detect an old male in the breeding-plumage; and I imagine that it is seldom that one is to be found there in summer, though in winter and spring adults certainly occur, as we not only learned from the inhabitants, but as may be seen from the account given by Herr Schrader (Journ. f. Orn. 1853, pp. 320, 321). Mr. Wolley succeeded in shooting three birds, which I myself dissected; and the figures of the *trachea* of this species, given by Mr. Yarrell in the last edition of his work (B. B. 3rd ed. iii. p. 309) are taken from the specimens I then prepared; but unfortunately, the engraver having omitted to reverse the drawings placed in his hands, the representations are in this particular inaccurate. These examples were apparently all young ones of the preceding year; but as the *trachea* of the Eider (*Somateria mollissima*, Boie), when immature, does not differ from that of the adult, I think that we may safely infer that these present the same appearance that they would have done had the subjects been older. Though we made unceasing inquiries, we could not ascertain that Steller's Duck breeds in any part of Norway or in the adjoining districts of Russia. In its habits it seems to resemble the common Eider, as much as it does in general appearance; and those I saw were only to be distinguished, at a distance, from the females or young males of that species by their smaller size. They were generally found swimming near the shore, or sitting at low water on the sea-weed-covered rocks, or flying near the surface from point to point. On one occasion, just as we had crossed a small but rapid river a few hundred yards from its mouth, a large flock came flying down over the water. They passed quite close to us; but our guns were not at hand. I presume they had been feeding higher up the stream; but at no other time did I ever see them at any distanoe from the shore."

Since, however, the above statements were published, Steller's Duck has been found breeding on the Varanger Fjord, as Professor Newton has sent us the copy of a letter from Mr. Schanke, stating that he had sent a couple of eggs, with the down from a nest of this bird, from Vardö, to be placed in the British Museum.

Pastor Sommerfeldt, who resided on the Varanger Fjord, has published the following interesting account of Steller's Duck:—

"It is found here throughout the year, particularly towards the spring, up in the fjords, but in the summer more frequently in the direction of Vardö, as, for instance, on the Skal and Komage rivers. Its eggs are never found here, but I have heard from Lapps who have been fishing on these rivers during the summer, that the bird is supposed to breed there. I have also heard it stated that it breeds to the eastward in Russian Finmark. That this bird's eggs are brought *commonly* by Russian fishermen and skippers to the traders at Vardö and Vatsö must, however, be most emphatically denied; and Schrader's statement may probably be founded on what has often been named to me, viz. that a Russian is said to have *once* brought eggs to *Vardö*, which *he* stated, and Schrader acknowledged, to be those of *Anas stelleri*. Nordvi, in particular, has had every year a good opportunity of seeing quantities of the eggs the Russians bring; but these eggs have been, almost without exception, those of *Laridæ*, *Mergus serrator*, *Mormon fratercula*, *Anas mollissima*, *Uria grylle*, and different kinds of Terns. I do not deny that it breeds either in East Finmark or Russian Finmark, but if so it is very rarely or in single

instances, and the information respecting it is most unreliable. Thus, Nordvi has received from South Varanger eggs of *Mergus serrator*, which were said to be those of *A. stelleri*; at Vatsö I have seen eggs of *Anas glacialis*, also said to be those of this bird. From Karlebotn I received, on the 10th of May, 1858, two males, which were much lighter-coloured than those I had before obtained, and were like females, excepting that the chin was black and the scapulars more curved. The two males shot in May were almost white at the bill, the head light greyish brown, the green topknot distinct, below this a ring of chequered black and white feathers, the fore part of the breast almost pure brown, on the fore part of the wing a spot almost pure white, one of the curved scapulars half white and blue. These were probably males in the second spring plumage. The same year I received young males, which were similar in colour to the females, and but slightly larger, as also old males in their magnificent winter-plumage."

The following is Von Middendorff's note concerning Steller's Duck in Siberia. He found the bird abundant and breeding on the Taimýr river, although not so common as the King Eider, and observes:—

"On the 25th of June their nests contained fresh eggs, seven to nine in number. This bird places its nest in the moss on the flat Tundras; it is cup-shaped and well lined with down. The male remains in the neighbourhood of the sitting female, who leaves the nest unwillingly, uttering a cry resembling that of our Common Teal, but harsher." Dr. Middendorff, who was the first to describe the egg of this Duck, gives the size as varying from 56 millims. in length by 41 millims. in breadth, to 64 millims. in length by 39 millims. in width. One of these eggs is now in Dresser's collection.

Further eastward the present species certainly occurs, having been originally discovered in Kamschatka by Steller, who found it breeding in inaccessible rocks, gregarious in its habits, but never seen to enter the rivers.

In the celebrated work on the 'Birds of North America,' by Messrs. Baird, Cassin, and Lawrence, the first-named author makes the following statement:—"The occurrence of this beautiful Duck on the shores of America is a matter of much uncertainty, no specimens actually taken in North America having come to my knowledge. . . . . It doubtless visits the north-west coast of America, where it is said by Bonaparte to be abundant; but with what foundation I do not know." We are able to restore Steller's Duck to a place in the American avifauna; for Mr. J. H. Gurney has kindly informed us that he possesses a female of this species obtained on the north-west coast of America by a person who acted as steward, or in some similar capacity, on board one of the vessels which visited that coast under Captain Collinson on his Arctic expedition in company with Sir Leopold McClintock.

We regret that we have been able to obtain no further information respecting the food of Steller's Duck; nor is it sufficiently established whether the male in the breeding-time doffs his magnificent dress and assumes the more sober coloration of his mate. Respecting this we have received the following note from Professor Newton:—

"Wolley reached the Varanger Fiord about a month before I did, and when he arrived he saw a few adult Drakes in the flocks in their full 'white' plumage. They soon, however, disappeared, leaving, no doubt, for their breeding-quarters; and then there remained, so far as we could judge by the three species he killed (now at Norwich), and also by what Nordvi and

Sommerfeldt told us, only non-breeding birds in brown plumage; or occasionally, may be, we saw one with a few white patches.

"All the Eiders take two or three years to get into the full adult plumage; and the immature birds appear to stay about in their winter-quarters, of which the Varanger seems to be chief as regards Steller's Duck. The old birds move off in spring or the beginning of summer, and the adult Drakes complete their full plumage before they go."

Steller's Duck was originally described by Pallas in 1769, from specimens brought by Steller from Kamschatka; and in this work a figure of the male is given. Sparrmann, in 1786, described it afresh under the name of *Anas dispar*. It was again renamed by Bonnaterre *Anas occidua*, the latter appellation being given on account of its supposed abundance on the *west* coast of North America, for which reason it was also commonly called Steller's Western Duck by many authors. In 1834 Nuttall proposed the present species as the type of a new genus *Macropus*; but this name having been preoccupied by Shaw for a genus of Kangaroos, falls, as does also the generic name of *Polysticta* proposed by Mr. Eyton in 1836, as *Polysticte* had been already used by Sir Andrew Smith in 1835 for a genus of Barbets. Ignorant of, or not heeding, the fate which had befallen the names already proposed for the present species, Prince Bonaparte, in 1838, gave the generic name *Stellaria* for it; but this would not stand either, having been previously employed by Möller in 1832 for a genus of Mollusca, and so it remained for Mr. George Robert Gray to form a new generic name in 1840, which was called *Eniconetta* (lege *Heniconetta*). The bird, however, is a thorough Eider, and must be placed in the genus *Somateria*. Many good figures of this Duck are given in the standard European books, foremost among them being a beautiful drawing by Wolf in Mr. Gould's 'Birds of Great Britain' (part 4).

The figures in the Plate represent an adult male and female, the former being drawn from a specimen in our own collection, obtained at the Varanger Fjord in May 1869, while the female is from a splendid example in Dr. Tristram's collection, from the river Taimýr. The descriptions of the adults are from the above-mentioned birds, the young female being described from a specimen in our own cabinet, shot on the coast of Norway, while the male, not quite mature, is in Professor Newton's collection.

In the preparation of the above article we have examined the following specimens:—

E Mus. Sharpe and Dresser.

a. ♂. Varanger Fjord, May 1869 (*Meves*). *b*. ♀. Coast of Norway (*A. Benzon*).

E Mus. H. B. Tristram.

a, b. ♂. Varanger Fjord (*A. Newton*). *c*. ♀. Taimýr river, Siberia (*Middendorff*).

E Mus. A. Newton.

a. ♂. Varanger Fjord (*A. N.*).

Genus ŒDEMIA.

Anas apud Linnæus, Syst. Nat. i. p. 196 (1766).
Oidemia, Fleming, Phil. of Zool. ii. p. 560 (1822).
Melanitta apud Boie, Isis, 1822, p. 564.
Œdemia, Stephens in Shaw's Gen. Zool. xii. pt. ii. p. 219 (1824, ex Flem.).
Platypus apud C. L. Brehm, Lehrb. eur. Vög. ii. p. 820 (1824).
Macroramphus apud Lesson, Man. d'Orn. ii. p. 414 (1828).
Maceranas apud Lesson, ut suprà (1828).
Pelionetta apud Kaup, Natürl. Syst. p. 107 (1829).
Fuligula apud Aud. Orn. Biogr. iv. p. 161 (1838).

The Scoters inhabit the northern portions of the Palæarctic and Nearctic Regions, breeding in high latitudes, and ranging further south in the winter. Three species inhabit the Western Palæarctic Region—two of which are constant residents, and the third only a rare straggler from the Nearctic Region. These birds are essentially marine in their habits, frequenting the sea-coast, except during the breeding-season, when they are often found inland. At other seasons of the year they frequent portions of the coast where they can find abundance of the small mollusca on which they usually feed, obtaining their food by diving. They fly swiftly and well, though usually not at any great height above the water, and are extremely expert divers, frequently remaining for long below the surface. Except during the breeding-season, they are gregarious, being often found in vast flocks.

They nest on the ground, either in the open or under a bush, their nest being a hollow scratched in the soil and lined with grass, moss, and down; and the eggs, which are numerous, are creamy-white in colour, and smooth in texture of shell.

Œdemia nigra, the type of the genus, has the bill about as long as the head, about as broad as high at the base, depressed and flattened towards the end, which is rounded, generally very broad; upper mandible with a prominence at the base, above enlarged on each side; unguis very large, broadly elliptical, decurved at the tip; nostrils large, oval; gape-line slightly curved, the upper mandible overlapping the lower one, scarcely concealing the ends of the lamellæ; trachea with two abrupt bony expansions, one at the upper larynx, the other roundish and flattened; lower larynx large but symmetrical; bronchi wide, moderate in length; wings rather short, pointed, the second quill longest; tail short, tapering; legs short, placed far aft; tarsus short, anteriorly scutellate; hind toe slender, with a large lobe; anterior toes long; interdigital membrane full; claws small, obtuse, slightly curved.



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VELVET SCOTER.

OEDEMIA FUSCA

ŒDEMIA FUSCA.

(VELVET SCOTER.)

Anas nigra major, Briss. Orn. vi. p. 423 (1760).
Anas fusca, Linn. Syst. Nat. i. p. 196 (1766).
La double Macreuse, Buff. Hist. Nat. Ois. ix. p. 242 (1783).
Anas fuliginosa, Bechst. Gemeinn. Naturg. Deutschl. 2nd ed. iii. p. 962 (1809).
Anas carbo, Pall. Zoogr. Rosso-As. ii. p. 244 (1811).
Melanitta fusca (L.), Boie, Isis, 1822, p. 564.
Oidemia, Flem. (*Anas nigra* et *fusca*), Phil. of Zool. ii. p. 260 (1822).
Oidemia fusca (L.), Steph. in Shaw's Gen. Zool. xii. pt. ii. p. 216 (1824).
Platypus fuscus (L.), C. L. Brehm, Lehrb. Naturg. eur. Vög. ii. p. 822 (1824).
Melanitta hornschuchii, C. L. Brehm, Vög. Deutschl. p. 904 (1831).
Melanitta megapus, C. L. Brehm, op. cit. p. 906 (1831).
Melanitta platyrhynchos, C. L. Brehm, op. cit. p. 907 (1831).
Fuligula fusca (L.), Degl. Orn. Eur. ii. p. 472 (1849).
Oedemia hornschuchii, C. L. Brehm, Vogelfang, p. 383 (1855).
Oedemia fusca (L.), C. L. Brehm, op. cit. p. 383 (1855).
Oedemia megapus, C. L. Brehm, op. cit. p. 384 (1855).
Oedemia platyrhynchos, C. L. Brehm, op. cit. p. 384 (1855).

Grande-Macreuse, French; *Sammetente*, *Sammet-Trauerente*, German; *De groote Zeeëend*, Dutch; *Flöielsand*, Danish; *Sjö-orre*, Norwegian; *Svärta*, Swedish; *Pilkkasiipi*, Finnish.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 956, 1007; Werner, Atlas, *Palmipèdes*, pl. 49; Kjærb. Orn. Dan. taf. 48, and Suppl. taf. 28; Frisch, Vög. Deutschl. taf. 165; Fritsch, Vög. Eur. taf. 50. fig. 1, taf. 52. fig. 6; Naumann, Vög. Deutschl. taf. 313; Sundevall, Svensk. Fogl. pl. 61. figs. 1, 2; Gould, B. of Eur. pl. 377; id. B. of G. Brit. v. pl. 29; Schlegel, Vog. Nederl. pl. 308; Roux, Orn. Prov. pl. 368.

♂ *ad.* nitidè niger, maculâ parvâ pone oculos et striâ obliquâ in alis albis: rostro aurantiaco, gibbo, naribus et marginibus nigris: iride fuscâ: pedibus rubris, membranâ natatoriâ nigricanti-rubrâ.

♀ *ad.* capite et collo nigro-fuscis, maculâ anteoculari et maculâ parvâ pone oculos albicantibus: corpore suprà nigro-fusco, plumis pallidiore marginatis: corpore subtùs pallidiore, albicanti notato: rostro nigricanti-plumbeo: iride fuscâ: pedibus sordidè rubris.

Adult Male (Stockholm, 30th May). Entire plumage deep glossy black, the underparts rather duller and browner; wings black, except the short secondaries, which are white and form a conspicuous band across the wing; a small white patch below the eye; bill broad, swollen over the nostrils, this portion

and the margin of the bill black, the rest of the bill bright orange-yellow; legs red, the webs of the feet darker; iris brown. Total length about 21 inches, gape 2·6, wing 10·7, tail 3·5, tarsus 1·8.

Adult Female (Archangel). Head and neck blackish brown; a large dull white patch in front of the eye, and another, rather smaller, behind the eye; upper parts blackish brown, the feathers with light margins; underparts lighter brown marked with dull white; wings like the male, but browner in colour; bill blackish plumbeous, less swollen than in the male; iris brownish; legs dull reddish.

Young Male (Archangel). Resembles the female, but has the light markings on the side of the head smaller and less distinct; legs brownish yellow.

Young in down (near Nyköping, 26th July). Crown, nape, hind neck, and sides of the head to a line from the base of the lower mandible deep brown; a small white spot below the eye; upper parts uniform dark brown with an olivaceous tinge; a small white patch of down on the wings; underparts white, the upper breast crossed by a dull-brown band.

The range of the present species is as nearly as possible the same as that of the common Scoter; for it inhabits the northern portions of Europe and Asia during the breeding-season, migrating southward during the winter. In North America it is replaced by a very closely allied form, which is only just specifically separable. In Great Britain it is much rarer than the common Scoter, and is almost only met with during winter on the coasts. Yarrell states that it has been obtained in Cornwall, Devonshire, Sussex, Hampshire, Kent, Suffolk, and Norfolk. It is found but rarely in Dorsetshire, and has, Mr. Mansel-Pleydell says, been shot on the Stour, in Poole Harbour, and in Portland Roads. Mr. Cecil Smith informs me that, though he has frequently met with it on the South-Devon coast, but not in such numbers as the common Scoter, he never observed it in Somersetshire. There is, however, a female in the Salisbury Museum labelled "Somerset." It occurs off our east coast; but Mr. Cordeaux, who says that he met with it at sea off Flamborough Head in the autumn, adds that it is much less common than *Œdemia nigra*, keeping far out at sea, even in the roughest weather, and is very rarely found in the Humber. Hancock speaks of it as being a winter visitant to the coasts of Northumberland and Durham, but not of common occurrence; and, referring to its occurrence in Scotland, Mr. Robert Gray writes (B. of W. of Scotl. p. 381) as follows:—"I am more familiar with this conspicuous bird as an east-coast species than as a visitor to the west. 'Black Ducks,' which are so very abundant in the Firth of Forth, are almost never seen on the Firth of Clyde; and although the Velvet Scoter is said to breed on the Faroes and Iceland, the flocks reaching our western shores are very much smaller than those visiting the estuaries of Aberdeen, Fifeshire, and East Lothian. Several small flocks were seen by Mr. Elwes on Loch Indaal, in Islay, in November 1867; and Mr. Graham has sent me word that he has seen the species at Ardrishaig. A very fine male, which I had an opportunity of seeing, was also shot on Gareloch in the first week of January 1869." Dr. Saxby says that it is merely an occasional winter visitant to Shetland, though it is common in Orkney, visiting there after southerly gales. Dr. Saxby adds that he has seldom seen it, and never obtained more than one specimen. It has been surmised by several ornithologists that this bird breeds in Scotland; but no authentic instance of its nest having been found appears to have been published. The late Mr. Gordon Cumming showed Captain Elwes eggs of this species which he

assured him he had taken in Scotland; and there is no doubt that it really has bred there; for Mr. E. T. Booth writes to me as follows:—"I have never myself seen the Velvet Scoter nesting; but I sent a man, who knows the bird as well as I do, to search a loch, and he found the eggs; but, as you are aware, the eggs are no good to me; so he did not bring them, and I never went to look at them. He saw both the male and female birds; so there is not the slightest doubt about the matter; and he also observed another pair within half a mile. This happened several years ago; and since then I have never been exploring in that district." For obvious reasons Mr. Booth does not give the locality where this nest was found. In Ireland this Scoter is occasionally met with on the coast in winter.

I do not find it recorded from Iceland; and, according to Captain Feilden, Mr. H. C. Müller has only once obtained it in the Færoes.

In Scandinavia the present species is common, and generally distributed during the breeding-season. Mr. Collett informs me that in Norway it "breeds numerously on the rivers and lakes in the interior, especially in the Gudbrandsdale, Valders, and Österdale, and in the northern districts up into Finmark. On the fells it is met with up to the birch-region, and it always breeds near fresh water. So soon as the females commence to sit, the males leave them, and, collecting in large flocks, resort to the sea, where they frequent the outer islands; and no old females are seen amongst these flocks. So soon as the young birds are full-grown they and the females rejoin the males, and some few remain over the winter on our coasts, though the larger proportion migrate southwards. They are found in winter as far north as Tromsö in 69° 30′ N. lat., but scarcely in Finmark proper. It breeds all along the Swedish coast. Meves found it nesting not unfrequently on Öland; and Nilsson says that it is tolerably widely distributed and common on the coasts of Sweden during the breeding-season, and has been found nesting from Blekinge and North-east Skåne up far into Lapland, and on the fells up into the birch-region. According to Dr. Palmén (Finl. Fogl. ii. p. 461) it breeds throughout the whole of Northern Finland, but in the southern portions chiefly on the coast. Fellman states that it is common throughout Enare, but becomes less numerous in Utsjoki; but, according to Malm, it was found commonly on the Pasvik river to its mouth. Sahlberg and Malmberg met with it at Kantalaks and Sonkelo; and it is recorded from Muonioniska, Enontekis, and Kemi. Brander says that it is less numerous in Kuusamo and Pudasjärvi; and Mr. Hollmerus found it breeding in Sotkamo in the summer of 1872; but south of this there are but few instances of its having been met with nesting in the interior, though it breeds along the coast down to Wiborg. It is said to breed commonly near Uleåborg, where I frequently saw it and have taken its eggs. It has been recorded from Gamla Karleby, Wasa, and the mouths of the Kumo and Eura rivers, but does not appear to range inland. It breeds numerously on Åland, and also less commonly off Åbo, the Nyland coast, and the parish of Ruolaks in the province of Wiborg. It is common in Northern Russia and Novaya Zemlya, and breeds not unfrequently near Archangel; but it appears to be much rarer on the Petchora river, for Messrs. Seebohm and Harvie-Brown only observed it twice at Stanavoialachta, and found one nest on the 6th July. Mr. L. Sabanäeff informs me that it breeds in the Orenburg Government and throughout the whole of Perm. In the countries skirting the south of the Baltic it does not appear to breed; but Borggreve says that it is a tolerably regular winter visitant to the shores of North Germany, especially in the

Baltic, but occurs seldom in the interior, and has been obtained in Münsterland on three occasions. Naumann, however, states that it is more frequently met with on inland waters than the common Scoter, and is seen almost annually on the Eisleber lake in small parties, and has been shot on several occasions in Anhalt; he also states that it occasionally breeds in Mecklenburg.

In the autumn it is common on the coasts of Denmark; and a considerable number remain over the winter, the rest passing further south. Professor Schlegel speaks of it as being less numerous in Holland than the common Scoter; and it is recorded from Belgium as a rare spring and winter visitant. In France it occurs on the coast, and occasionally even inland, in winter; and it sometimes, though rarely, visits the shores of Provence. Professor Barboza du Bocage includes it in his list of the birds of Portugal with a query; but Colonel Irby did not meet with it in Southern Spain, though he surmises that it occurs there in winter. Lord Lilford, however, writes to me saying, "A small flock of these Scoters frequented the port of Santander throughout the month of May 1876. I saw one there as late as the 21st June, and a large flock at the mouth of the Gironde on the 24th of that month."

In the Mediterranean it is but rare. It occurs in Savoy at irregular intervals on passage, and is of accidental occurrence in Italy, but is stated to occur every winter near Venice. I do not find it recorded from Sicily and Sardinia, except that Salvadori mentions (J. f. O. 1865, p. 326) that a male specimen is mounted in the Cagliari Museum. Dr. Krüper speaks of it as being very rare in Greece; but, according to Erhard, it winters in the Cyclades. In Southern Germany it is met with as a rare straggler, but, Dr. A. Fritsch says (J. f. O. 1872, p. 372), is oftener seen in Bohemia than *Œdemia nigra*. On the 7th February 1850 he received a fine old male, and soon after that Mr. Lokaj obtained a female, killed near the Hetzinsel, on the Moldau. Herr von Pelzeln says that there are specimens in the Vienna Museum from the Neusiedler lake, Seefeld, Laibach, and from Hungary; but I do not find it recorded from the Lower Danube, though Professor von Nordmann states that it occurs in winter in very small numbers in the Black Sea. It was not observed by Canon Tristram on the coast of Palestine, but occurs in North-east Africa, where, Von Heuglin says, it visits the lagoons of Lower Egypt as a rare winter straggler, most of the specimens seen being immature birds.

It is somewhat difficult to say how far eastward in Asia it extends, but probably across the continent. According to Pallas it is found on the Caspian, but is less common than *Œdemia nigra*; and De Filippi states that it was abundant on a pool of water near Tabriz and on Lake Gokscha. Dr. Severtzoff states that it occurs on passage in winter in Turkestan, but it does not appear to straggle so far south as India. Von Middendorff says that it was shot on the south coast of the sea of Ochotsk; and Dr. Radde remarks that old females are seen throughout the summer in Northern Mongolia in districts below 50° N. lat., but they are rare, and he never saw any males in Southern Siberia. In May 1856 one out of four females was shot on a freshwater lake at Kulussutajefsk; and in May 1858 he saw eight individuals in the Bureja Mountains. In Eastern Mantshuria it has been recorded much further south; for he received a female which had been killed at Port May in 43° N. lat. on the 3rd November 1860. It is doubtful whether these East-Asiatic specimens are referable to the present species or to its closely allied American congener; and I have been unable to examine specimens and settle this question: but it appears probable that some belong to the American form; for, according to Mr. Swinhoe, both forms occur

in China and Japan, from which latter country he has specimens collected by Captain Blakiston. In the Nearctic Region the American form, *Œdemia velvetina* (Cass.), only is found.

Judging from specimens of the American and European Velvet Scoters I have examined, the differences, though slight, are constant, and enable the two forms to be clearly separated. In the American bird the feathering on the upper mandible extends further forward both on the sides of the bill and especially on the centre of the basal protuberance, and the white patch bordering the eye is larger and extends further back. In measurements I do not find any appreciable difference, except that perhaps the American bird has a slightly broader bill.

Like the common Scoter the present species frequents the sea-coasts, except during the breeding-season, when they resort to the freshwater lakes and ponds. It is a rather heavier and more clumsy bird than that species, and may easily be distinguished at a considerable distance by its larger size and white patch on the wing. It swims with great ease, and is an excellent diver, remaining frequently some time under water; but it progresses on land clumsily, and when it takes wing it rises heavily; but when once in the air its flight is swift and often protracted. It does not appear to shun boisterous weather; for I have frequently seen it diving not far from the shore whilst a heavy sea was running; and it appears to obtain its food almost entirely by diving. Macgillivray says that on the Scotch coast this Duck appears to live solely on bivalve mollusca of the genera *Mactra*, *Tellina*, *Solen*, *Mytilus*, *Cardium*, and others; and some which he examined from the Bay of Kirkaldy had their gizzards filled exclusively with *Donax trunculus*.

The nest of this Scoter is on the ground, near some inland sheet of water, and, so far as I know, never close to salt water. I have, however, found a nest on one of the small islands outside Uleåborg, in the Gulf of Bothnia, where the water is fresh or only slightly brackish. The nest is a mere depression in the soil under a bush, well lined with down intermatted with grass and a few leaves; and the number of eggs, which are usually deposited late in June or early in July, varies from eight to ten. Messrs. Seebohm and Harvie-Brown, who found a nest on the Petchora, near Stanavoialachta, and shot the female as she rose from it, say that it was under a creeping matted dwarf birch, far from any water, and contained eight eggs and a good supply of down. Mr. Collett informs me that nests he has found in Norway contained from eight to ten eggs, and that, as a rule, this Duck breeds rather late in the season, most eggs being found in the latter half of June or early in July. Not unfrequently the same pair will occupy the same nest several seasons in succession. Eggs of this Duck in my collection are uniform ivory-white with yellowish buff tinge, and measure from $2\frac{29}{40}$ by $1\frac{38}{40}$ inch to $2\frac{32}{40}$ by $1\frac{39}{40}$ inch in size.

The specimens figured are the adult male and female above described, both of which are in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Stockholm, May 30th, 1870 (*Meves*). *b*, ♂ *ad.* Stockholm, May 30th, 1871 (*Meves*). *c*, ♀ *ad.*, *d*, ♂ *juv.* Archangel (*Piottuch*). *e*, *pull.* Near Nyköping, Sweden, July 26th, 1872 (*Meves*).

E Mus. H. B. Tristram.

a, ♂, *b*, ♀. Orkneys (*Dunn*).



J.G.Keulemans lith

M & N Hanhart imp

COMMON SCOTER.
OEDEMIA NIGRA.

ŒDEMIA NIGRA.

(COMMON SCOTER.)

Anas nigra, Linn. Syst. Nat. i. p. 196 (1766).
La Macreuse, Buff. Hist. Nat. Ois. ix. p. 234 (1783).
?*Anas cinerascens*, Bechst. Gemeinn. Naturg. Deutschl. 2nd ed. iii. p. 1025 (1809).
Anas atra, Pall. Zoogr. Rosso-As. ii. p. 247 (1811).
Oidemia, Flem. (*Anas nigra* et *fusca*), Phil. of Zool. ii. p. 260 (1822).
Melanitta nigra (L.), Boie, Isis, 1822, p. 564.
Platypus niger (L.), C. L. Brehm, Lehrb. Naturg. eur. Vög. ii. p. 820 (1824).
Oidemia nigra (L.), Flem. Brit. Anim. p. 119 (1828).
Oidemia leucocephala, Flem. op. cit. p. 119 (1828, nec Gmel.).
Melanitta nigripes, C. L. Brehm, Vög. Deutschl. p. 901 (1831).
Melanitta megauros, C. L. Brehm, op. cit. p. 902 (1831).
Melanitta gibbera, C. L. Brehm, op. cit. p. 902 (1831).
Fuligula nigra (L.), Degl. Orn. Eur. ii. p. 470 (1849).
Oedemia nigra (L.), C. L. Brehm, Vogelfang, p. 383 (1855).
Oedemia gibbera, C. L. Brehm, ut suprà (1855).
Oedemia nigripes, C. L. Brehm, ut suprà (1855).
Oedemia megauros, C. L. Brehm, ut suprà (1855).

Tunnag-dubh, Gaelic; *Macreuse*, French; *Macrosa*, Italian; *Bourk-el-behar*, Moorish; *Trauerente*, *Mohrente*, German; *Zwarte Zeeëend*, Dutch; *Sort-and*, Danish; *Hrafnsönd*, Icelandic; *Svart-and*, Norwegian; *Sjöorre*, Swedish; *Merilintu*, Finnish; *Chernayautka*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 978; Werner, Atlas, *Palmipèdes*, pl. 50; Kjærb. Orn. Dan. taf. 48; Suppl. taf. 28; Fritsch, Vög. Eur. taf. 48. fig. 8, taf. 50. fig. 3; Naumann, Vög. Deutschl. taf. 312; Sundevall, Svensk. Fogl. pl. 61. figs. 1, 2; Gould, B. of Eur. pl. 378; id. B. of G. Brit. v. pl. 28; Schlegel, Vog. Nederl. pl. 307; Roux, Orn. Prov. pls. 369, 370.

♂ *ad.* niger, capite colloque purpureo et corpore suprà viridi-purpureo nitentibus, corpore subtùs sordidiore et vix fusco lavato: rostro plumbeo-nigro, ad basin tuberculi ossei lineâ flavâ centraliter, et suprà plagâ magnâ aurantiacâ notato: iride fuscâ: pedibus sordidè olivaceis.

♀ *ad.* mari dissimilis: corpore suprà obscurè fusco, capite suprà saturatiore, collo antico sordidè albido, pectore et hypochondriis fuscis, abdomine centraliter griseo-albo fusco notato.

Adult Male (Stavanger, February). Entire plumage deep black, the upper parts glossed with greenish steel-blue or purplish blue, the latter tinge predominating on the head and neck; underparts rather duller, with a brownish tinge; bill with a large bulb or protuberance at the base of the upper mandible, a line

through which and a large patch in front are orange-yellow, the rest of the bill being bluish black; iris dark brown; legs dark dull olivaceous. Total length about 20 inches, gape 2·4, wing 9·5, tail 4·1, tarsus 1·8.

Adult Female (Archangel, 9th August). Upper parts dull dark brown, the feathers with lighter edges; crown dark brown, much darker than the back; sides of the head greyish black; chin and upper throat pure white; breast and flanks dull brown; centre of the abdomen white, marked with brown; bill without the bulb at the base, only slightly swollen towards the base of the upper mandible, dull bluish black in colour; legs dull olivaceous.

Young. Resembles the female, but is duller and rather more uniform in colour.

Young in down. Upper parts dark brown, unspotted; chin white; cheeks and abdomen greyish; the chest crossed by a dark band; bill blackish plumbeous; legs olivaceous.

Obs. I have been unable to ascertain whether the male of the present species has a late summer plumage; and none of the Swedish or German naturalists appear to have been in a position to elucidate this; but it seems probable that, like other ducks, it assumes in the early autumn a dress resembling that of the female, and probably in that dress the old males have been mistaken for immature birds.

Found throughout the northern portions of Europe and Asia during the summer season, the common Scoter ranges south during the winter season, but does not go beyond the Atlantic and North-German coasts, except as a straggler. With us in Great Britain it is tolerably widely distributed off the coasts during the winter season, and certainly breeds in several parts of Scotland. Dr. Saxby says (B. of Shetl. p. 253) that it is an occasional winter visitor to the Shetlands, being more frequently seen upon the west coast of the mainland than in the north isles, and then only in very small numbers. He observed it in Unst as late as the middle of May; but there is, he adds, no reason to suppose that it breeds there. Referring to its nesting in Scotland, Mr. A. G. More writes (Ibis, 1865, p. 445) as follows:—"Mr. W. Dunbar tells me that the Black Scoter breeds every year in many parts of the moors in Caithness, making its nest in the boggy swamps around the lakes. He has known the eggs taken more than once. Mr. R. J. Shearer writes that "a 'Black Duck' is well known as breeding on one or two lakes in the Thurso district." The late Roualeyn Gordon Cumming told Captain Elwes that he had on two or three occasions shot the bird off its nest in Inverness-shire; and the latter gentleman saw a young bird, half-grown, which was killed in the upper part of Strathglass early in September. In a letter from Mr. E. T. Booth, who probably knows more, and has published less, about the breeding of rarer species of birds in Scotland, than most ornithologists, he informs me that the present species nests in several parts of Caithness; he has seen eggs and young in two or three different localities in Sutherland, and once in Inverness. In some parts of Caithness it is, he adds, so numerous that one might expect to find four or five, or even more, nests in a day's search.

It has not been known to breed in England, but in winter is met with regularly off the coast down to the shores of Devon and Cornwall, occasionally during severe weather visiting inland sheets of water. Referring to its occurrence off the Somersetshire coast, Mr. Cecil Smith writes to me that it is "by no means so numerous a winter visitant to our coast as it is to the south

coast of Devon. I have, however, occasionally shot one near Weston-super-Mare. On the south coast of Devon they are very common all through the winter, and large flocks of them may generally be seen about; but they are very shy and difficult of approach. A foggy day seems to make all the difference, as I once got amongst a large flock off Dawlish in a thick fog on the 19th of November, and shot several in a short time. I was rather surprised to find that, although these birds had lately arrived on the coast, very few having been seen about before, they were in full moult, and many of them were perfectly unable to fly, having moulted so many of their quill-feathers. How they managed their migratory journey in this state seems to me a difficulty. I have only seen one or two Scoters in Guernsey, and that only on one occasion; but I am informed they are occasionally more numerous."

It is also a regular winter visitant to many localities on the coast of Ireland, but has not, so far as I can ascertain, been known to breed there. It is found in Iceland. Faber thought that it was only to be met with at Myvatn, where it breeds; but Preyer mentions one shot out of a flock of eight at Arnarvatn.

Captain Feilden, who includes it in his list of the birds inhabiting the Færoes, says that Mr. H. C. Müller informed him that a single pair were observed at Hoidenor on the 30th June, 1868, and that the male was shot.

Throughout Scandinavia it is generally distributed, but breeds only in the northern portions of the country or on the fells. Mr. Robert Collett informs me that "in Norway its range is about the same as that of the Velvet Scoter; for, like that species, it breeds on the elevated southern fells, and in the northern districts up to the Varanger fjord; but in most localities it appears to be rather less numerous than *Œd. fusca*. During the breeding-season the males leave the females whilst these latter are incubating, and resort to the sea, where, in the autumn, they are joined by the females and young birds; and during the winter they are found on the coast in scattered flocks up to Tromsö. In Finmark proper it can scarcely be said to be resident; but sometimes a few remain over winter at open places in the interior." Professor Nilsson says that it breeds only in the high northern portions of Sweden, but in the autumn moves southwards, appearing in Southern Sweden in October, some remaining throughout the winter, whilst others move further south. In the spring they are again seen in May, on their passage north. During the breeding-season it is tolerably widely distributed in Finland, and nests in the northern districts. Dr. Palmén says (Finl. Fogl. ii. p. 456) that Von Wright met with it in June 1856 at Alkkula, on the lower Torneå river. It occurs at Uleåborg and Kajana, and breeds there, but is not common. Aschan found a nest, with four eggs, in Sotkamo, on the 25th June 1867; and Hollmerus found it breeding there in 1872. Sadelin records it from Osterbotten; and Alcenius found it breeding between Gamla Karleby and Wasa. Aschan also found it breeding in Northern Savolaks; and J. von Wright, who observed it on passage above Kuopio, says that a few breed there. It is somewhat remarkable that, according to Tengström, it breeds not uncommonly on the northern shores of the Ladoga, and is seen on the Wuoksen until the ice forms. In Southern Finland it is otherwise only found on passage; Palmén gives many instances of its occurrence in various parts of the country, and says that it has been obtained near Helsingfors as late as the early part of November. On the coasts of Novaya Zemlya and Northern Russia it is numerous; and large numbers breed in the Archangel Government. Messrs. Seebohm and Harvie-Brown,

who met with it on the Petchora river, say (Ibis, 1876, p. 447) "the first common Scoter was identified as it flew close past the steamer at Ust Zylma on the 1st June. Afterwards, at various localities, common Scoters were seen by us as we floated down stream; and they were common on the tundra as far north as Stanavoialachta, especially among the lakes near Vassilkova and Yooshina and at Stanavoialachta, where the tundra has more the appearance of a rolling prairie than elsewhere." Mr. L. Sabanäeff says that it is common in Central Russia on passage, and occurs at the same seasons on the lakes in the Ural, where it probably breeds in the northern portion of the Perm Government. It is said to be but a rare bird in the Baltic Provinces, where it occurs in winter or on passage.

Borggreve says that it is a regular winter visitant to the shores of North Germany, though not very common. It is, however, more numerous in the North Sea, and less so in the Baltic than the Velvet Scoter. Baron von Droste-Hülshoff says that it has been seen at all seasons of the year in Borkum, but it has not been known to breed on that island or in North Germany. According to Mr. J. Collin it appears on the coasts of Denmark in August or September, becoming more numerous in October and November, and is most so during severe winters. One was obtained on the Flensborg fjord in July. Professor Schlegel speaks of it as being one of the commonest marine Ducks found on the coast of Holland during the cold season; and it is equally common in Belgium, rarely, however, visiting inland marshes and rivers during severe weather. It visits the coasts of France in immense numbers in cold weather, especially during north-west winds, and usually leaves in April; but stray individuals may be observed off Dunkerque throughout the year. In the south of France it is of rare occurrence; but it appears to pass with tolerable regularity along the valley of the Rhône and through Savoy on its way to the Swiss lakes; and M. Adrien Lacroix says that it occurs regularly on passage in the French Pyrenees. Professor Barboza du Bocage includes it in his list of birds found in Portugal; and Dr. Rey found it tolerably numerous there in March. Colonel Irby says (Orn. Str. Gibr. p. 205) that he found this Duck in some seasons very common about the Straits of Gibraltar, especially after rough weather in Gibraltar Bay, but it only appears in small lots. The earliest noticed was seen on the 12th November, and the latest on the 12th March. Mr. Howard Saunders observed one exposed for sale in the market at Malaga; and Colonel Irby informs me that it is frequently seen near Santander in May, and one was observed as late as the 21st of June. In Italy it is of rare and accidental occurrence; and, indeed, in the Mediterranean it is only known as a very rare straggler. Dr. Krüper records it as of very rare occurrence in Greece; and Lord Lilford, in a letter just received, writes to me, it is "a very scarce bird in the Mediterranean. We saw a pair in the Gulf of Foz, near Tour St. Louis, November 1874." It is occasionally met with on inland waters in Southern Germany; and Dr. A. Fritsch states (J. f. O. 1872, p. 372) that it is exceedingly rare in Bohemia, where the following captures have been recorded:—one at Franzensbad, obtained by Mr. Khittl; one at Hohenelbe in December 1846; one on the Mastiger pond, Arnau, on the 17th April 1848; one on the Moldau, near Klecan, not far from Prague; and the specimen in the college at Budweis was shot by Bürger, a tanner, on the Moldau. I have found no record of its occurrence on the Lower Danube; and Professor von Nordmann says that he never met with it in Southern Russia, but quotes Pallas as to its occurrence on the Black Sea. It is stated also to occur in the Caspian; and Canon Tristram says that

it is found on the coast of Palestine; but I do not find any record of its occurrence in North-east Africa. Loche, however, states that it occurs in Algeria; and, according to Favier (*fide* Colonel Irby, *l. c.*), it is "found in abundance near Tangier, arriving sometimes as early as August, retiring northward in April." It is also stated by Mr. Godman (Nat. Hist. Az. p. 37) to frequent the "Azores—eastern, central, and western groups;" and he adds that he saw a black Duck on the lake at the Furnas, in St. Michael, which, he believes, belonged to this species.

In Asia the common Scoter appears to be restricted to the northeru districts, and does not range far south. Von Middendorff saw what he believed to be an individual of the present species on the 4th June (O. S.), on the Taimyr river, in $73\frac{3}{4}^{\circ}$ N. lat.; and he found a pair breeding on the Boganida, the female sitting on five eggs, on the 27th June, and shot both birds. It would appear that the American form of Black Scoter is found on the eastern shores of Asia; for Mr. Swinhoe says that it is that species; and not *Œdemia nigra*, which occurs in China. The American Scoter, *Œdemia americana* (Swains.), which replaces *Œdemia nigra* in the Nearctic Region, differs but slightly from this species; but still the difference appears to me to be constant, and sufficient to entitle it to specific rank. In *Œdemia americana* the entire protuberance at the base of the upper mandible is orange-yellow, this colour extending a little in front of the nostrils, whereas in *Œdemia nigra* there is a mere line from the base of the bill over the centre of the protuberance yellow, and a similarly coloured patch extending from the nostrils to the tooth of the bill, the protuberance itself being blackish blue.

Although during the breeding-season this Duck is found inland, yet at other seasons of the year it is essentially a marine species, frequenting the coast in vast flocks, and feeding on various kinds of marine shells, which it obtains by diving. It appears to prefer sandy shores and places where there are shell-banks to the portions of the coasts where the shores are muddy, doubtless on account of the facility for obtaining food afforded in these former localities. I used frequently to see its American ally, which differs but very slightly from our European Scoter, frequenting the rock-bound coast of the Bay of Fundy, where they fed on the small shells which were to be seen at low water in clusters attached to the rocks. As a rule, they were in very large flocks, and were so exceedingly shy and cautious that one could rarely approach within shot; and though I saw thousands, I obtained but comparatively few specimens.

The Scoter flies well, propelling itself at considerable speed, though low; and when it rises it does so rather heavily and with a good deal of splashing. It dives very well, and remains often a considerable time under water, not unfrequently rising at some distance from where it plunged below the surface. In general habits the Scoters assimilate much, and what is said of one may almost be said of all the rest. The call-note of the common Scoter, like that of its allies, is a harsh sound; but during the breeding-season the male is said to utter a pleasant bell-like double note resembling the syllables *Skrueck-lueck*; and Faber says that when near the nest the male utters a series of loud flute-like tones, resembling the syllables *tü-tü-tü-tü* &c., which is answered by the female with a harsh *re-re-re-re-re*.

The nest of the common Scoter is placed on the ground; and, like that of the Velvet Scoter, it is a mere hollow scratched in the soil, either in the open or under cover of a bush, and well lined with grass, moss, and down, which the female plucks off herself. Mr. Collett informs me that he has generally found the nests placed on small islands, and that a pair will frequently

occupy the same nest several years in succession. The eggs, which are usually deposited about the middle of June, are, as a rule, eight or nine in number, and are creamy white in colour, smooth in texture of shell, those in my collection varying in size from $2\frac{18}{40}$ by $1\frac{32}{40}$ to $2\frac{27}{40}$ by $1\frac{32}{40}$ inch.

The specimens figured, an adult male and female, are those above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.* Stavanger, Norway, February 1871 (*R. Collett*). *b*, ♀ *ad.* Jurus, Archangel, August 9th, 1875 (*Piottuch*). *c*, ♀ *jun.* Jurus, September 17th, 1874. *d*, ♂. Dvina, near Archangel, May 15th, 1873. *e*, ♀. Archangel, July 17th, 1875 (*Piottuch*). *f*, *pull.* Sweden.



J. G. Keulemans lith

M. & N. Hanhart imp.

SURF-SCOTER.
OEDEMIA PERSPICILLATA

ŒDEMIA PERSPICILLATA.

(SURF-SCOTER.)

Anas nigra major freti hudsonis, Briss. Orn. vi. p. 425 (1760).
Anas perspicillata, Linn. Syst. Nat. i. p. 201 (1766).
La Macreuse à large bec, Buff. Hist. Nat. Ois. ix. p. 244 (1783).
Anas latirostris, Bodd. Tabl. des Pl. Enl. p. 58 (1783).
Melanitta perspicillata (L.), Boie, Isis, 1822, p. 564.
Platypus perspicillata (L.), C. L. Brehm, Lehrb. Naturg. eur. Vög. ii. p. 823 (1824).
Œdemia perspicillata (L.), Steph. in Shaw's Gen. Zool. xii. pt. ii. p. 219 (1824).
Macroramphus, Less. (*Anas perspicillata*, Linn), Man. d'Orn. ii. p. 414 (1828).
Pelionetta, Kaup (*Anas perspicillata*, Linn.), Natürl. Syst. p. 107 (1829).
Fuligula perspicillata (L.), Aud. Orn. Biogr. iv. p. 161, pl. 317 (1838).
Pelionetta perspicillata (L.), Bp. Compt. Rend. xliii. p. 651 (1856).
Pelionetta trowbridgii, Baird, B. of N. Am. p. 806 (1858).
Œdemia perspicillata, var. *trowbridgei*, Coues, Key, p. 295 (1872).

Macreuse à large bec, French; *Brillenente*, *Brillen-Tauchente*, German; *Brilleand*, Danish; *Hvitnackad Svärta*, Swedish.

Figuræ notabiles.

Edwards, Nat. Hist. B. iii. pl. 155; D'Aubenton, Pl. Enl. 995; Kjærb. Orn. Dan. Suppl. taf. 8; Naumann, Vög. Deutschl. taf. 314; Sundevall, Svensk. Fogl. pl. 84. fig. 2; Gould, B. of G. Brit. pl. 30; Audub. B. of Am. pl. 402; Wilson, Am. Orn. pl. 67. fig. 1.

♂ *ad.* nitidè niger, plagâ magnâ in pileo et alterâ in nuchâ albis: rostro magno, gibbo, albo, rubro et aurantiaco notato, utrinque maculâ nigrâ: iride albâ: pedibus pallidè rubris.

♀ *ad.* pileo nigro-fusco: plagâ nuchali albidâ nigro-fusco notatâ: capitis lateribus et collo sordidè fuscis: plagâ suboculari et plagâ pone oculos fusco-albidis: corpore reliquo saturatè fusco, suprà saturatiore, plumis vix pallidiore marginatis: corpore subtùs pallidiore: rostro nigricanti-plumbeo: pedibus olivaceis: iride cinereâ.

Adult Male (Point Lepreaux, Bay of Fundy). Entire plumage deep glossy black, except a large pure white patch on the centre of the crown, and another on the hind neck; bill peculiarly shaped, the upper mandible being bulged into a large lump on each side of the base, and raised centrally nearly to the tooth; space round the nostrils rich red, becoming orange-yellow on the sides; space before and behind this band pure white, tooth of the bill pale yellow; a large patch on each side of the bill black, the space between this patch and the feathers orange-yellow and vermilion-red; legs dull pinkish red; iris white. Total length about 20 inches, gape 2·5, wing 9·6, tail 3·6, tarsus 1·8.

Adult Female (Point Lepreaux). Crown blackish brown; a large triangular white patch on the nape, marked with blackish brown; sides of the head and neck dull brown; a dirty white patch below and in

front of the eye, and another behind chin, brownish white; rest of the plumage generally dark brown, the upper parts rather darker than the underparts, the feathers having narrow light brown margins; bill less swollen than in the male, leaden-blackish in colour; iris greyish; legs warm olivaceous.

Young Male (Point Lepreaux). Lower part of the back and entire wings deep brown; abdomen marked with white, the central portion white, merely marked with blackish brown; sides tinged with brown; rest of the plumage as in the old male; but the white patch on the crown is wanting, and that on the hind neck is smaller; legs duller; bill duller in colour, and less swollen than in the old male.

Inhabiting the northern portion of the Nearctic Region, the Surf-Scoter has only been met with in Europe as a rare straggler. Yarrell (Brit. B. 3rd ed. iii. pp. 324, 325) cites five instances of its occurrence, viz.:—one specimen from the Firth of Forth, in the possession of Mr. Gould; one, Musselburgh Bay, Firth of Forth, 1852 (these two records possibly refer to the same specimen); one near Weymouth, in Dorsetshire, in the winter of 1851, and a second in the winter of 1853; and one recently killed specimen sent to Mr. Bartlett for preservation, no locality being given, as recorded in the 'Naturalist,' vol. iii. p. 420. Besides these there are several other occurrences on record. Mr. Robert Gray (B. of W. of Scotl. p. 383) writes as follows:—"The only specimen of this unmistakable species which I have seen in the west of Scotland is one now in the collection of Sir James Matheson, Baronet, of Lewis; it was shot in the winter of 1865 at Holm, near Stornoway, by Mr. Macgillivray, of Stornoway. The species is included in a list of Caithness birds by Mr. E. S. Sinclair, of Wick; but neither date nor locality is given. An adult male was shot at Swanbister, parish of Orphir, in Orkney, in March 1866, as I have been obligingly informed by Mr. J. H. Dunn; and in June 1847 the same gentleman states that in one of his boating excursions after other birds in Rona's Voe, Shetland, he saw an adult male of this species several times, but was unable to procure it." Messrs. Baikie and Heddle's statement that "small flocks are seen in our sounds every winter" is an obvious mistake. Mr. J. E. Harting says that Mr. E. Hargitt possesses a specimen killed on the Aberdeen coast in November 1855; but in answer to a letter inquiring about this specimen the latter gentleman writes to me saying that he purchased the specimen in question from Mr. Small, naturalist, of Edinburgh, who received it from a man in the north of Scotland, and understood it to be British-killed; but on inquiry it was elicited that this person did not shoot it, but "purchased it with a lot of other birds." Altogether the evidence respecting this specimen is so incomplete that it cannot well be included as a British-killed specimen. There is a specimen, however, of this Duck in the collection of Mr. J. H. Gurney, which was obtained at Crofton, Cumberland, in August 1856. According to Mr. Rodd (Zool. 1865, p. 9794) one was obtained at Scilly in September 1865, and another (Zool. 1867, p. 1017) at the same place in October 1867. Mr. T. M. Pike informs me that in February 1875, in the sound between Cava and Rysay Little, two of the Orkneys, he got close to a Surf-Scoter, which was swimming with three Velvet Scoters, and fired at it, as it rose, at a distance of not more than 25 yards; but it dived, came up astern of the boat, and flew off as if uninjured. The second specimen, Mr. Pike writes, "I met with exactly a year later, at the same place. This time I took the precaution of towing down a gunning punt from Stromness with a punt-gun, which carried a pound of shot. I saw a beautiful adult drake in company with a lot of Velvet Scoters, and worked the punt up within range. He parted from the rest; and

after watching him a bit, I gave him the contents of the big gun, which, tough and hard to kill as these birds are, proved too much for him. I sent it down to Christchurch to be stuffed; and you may have seen in the newspapers at that time an account of one killed there, which is an error; for the specimen referred to was my bird. There is a specimen in the Museum at Stromness in a miserable condition; but there is no evidence to show whence it came, though Mr. Dunn told me that all the birds in that collection were local specimens." In Ireland it has, according to Thompson, been once obtained; for he writes (B. of Ireland, iii. p. 118) as follows:—"A beautiful adult male of this species was shot at Ballyholme, Belfast Bay, on the 9th of September, 1846, by Snowden Corken, Esq. It was alone, about two hundred yards from the shore, allowed three shots to be fired at it before attempting to dive, and was killed at the fourth or fifth shot, on reaching the surface after having dived. Two of these birds had, a day or two before, been observed in company in the same locality; and one individual was seen several times in the course of a few weeks after the subject of this notice had been killed."

On the continent of Europe it has occurred on several occasions as a rare straggler. Professor Newton informs me that Mr. Wolley obtained one in Lapland; but he cannot now furnish particulars of date or locality. Malm says that it occurs, though very rarely, in Enare-Lapland; and, according to Mr. Knoblock, of Muonioniska, one was shot in the summer of 1858 near the village of Kyrö, in the Kittilä parish. Nilsson says that in 1833 a specimen was killed at Karesuando by the Rev. L. L. Læstadius and sent to the Stockholm Museum, and that a second example, also sent to the same museum, was killed at Calmar, on the 14th June 1846, by a pilot called Wirsen. Dr. Palmén says that a male was shot on Åland in 1866, and sent to Helsingfors stuffed as a decoy; a second male was killed in May 1867 at Pojo, in Western Nyland, and sent in the same way to Helsingfors, both specimens being now in the museum of that town. Professor Malmgren informs me that there was a third example from Åland, but that it was destroyed. Naumann includes it, with doubt, as a German bird, and states that a female is said to have been killed on the Rhine, but adds that possibly a mistake may have been made in the determination of the specimen. Mr. J. Collin says that there is a specimen in the Copenhagen Museum, which was sent from the Færoes, in the autumn of 1853, by Mr. H. C. Müller, who some years previously saw a pair on Suderö. According to Professor Blasius (J. f. O. 1871, p. 213) it has occurred on Heligoland; but it is not included in Mr. Cordeaux's list of the birds which have been obtained there. It is stated to occur accidentally on the coast of Flanders during severe winters; and Messrs. Degland and Gerbe state that it occurs on the sea-coasts of Artois, Picardy, and Normandy. An immature bird was killed near Calais in the winter of 1835; and a second was exposed for sale in the Caen market at the same season. Specimens are not unfrequently sent up to Paris; and Messrs. Degland and Gerbe add that they saw in 1845, 1846, 1852, and 1864 four or five individuals which had been obtained in the winter season.

The true home, however, of this Scoter is the Nearctic Region; and it is common both on the Pacific and Atlantic coasts, breeding far north in the Arctic regions. Dr. T. M. Brewer writes to me respecting its occurrence in America as follows:—"The Surf-Duck, so abundant both on the Atlantic and Pacific coasts of North America, is known to our gunners and fishermen as the Skunk-billed Coot, and by some is called the Hollow-billed Coot, "coot" being a

designation given to all sea-ducks, including Eiders, Scoters, and Velvet Ducks. The young and female of this species, as well as those of the American Scoter, are indiscriminately known as Grey Coots. In Greenland only a few of this species are known to have occurred. Mr. Ross found it abundant on the Mackenzie river; Captain Blakiston received a number of specimens from Hudson's Bay, where Mr. Murray also obtained it, and where it occurs only during its migrations. From September to April this species is common on the entire Atlantic coast from Nova Scotia to North Carolina; and Dr. Bachman found a few as far south even as Charleston. Its presence at this season is regulated quite as much by the abundance of its food as by the severity of the weather. Until midwinter the flocks wend southward, finding food more abundant in the warmer waters; but after February the movement is northwards, and by the end of April the immense procession of this very abundant species has passed beyond the Bay of Fundy to their breeding-places, with the exception of crippled, immature, superannuated, and otherwise unmated individuals. The flesh of this Duck is dark-coloured, and has a very strong and peculiar flavour, which, however, is not unpalatable to many, but requires one to become accustomed to it to fancy it. It is as abundant on the Pacific coast as on the Atlantic, where it is found as far south as San Pedro. It was found breeding at Sitka by Mr. Bischoff, and by Mr. Dall at the mouth of the Yukon. Mr. Lockhart found this species breeding near the Arctic Sea, on the edge of a small portage between two lakes. It was also found breeding in considerable numbers near Fort Anderson by Mr. Macfarlane. Its nest contained usually six eggs, and was not readily distinguishable from that of the Velvet Duck. One only contained as many as eight eggs. It was also found breeding at Fort Resolution, on the Yukon, near Fort Simpson, at Fort Rae, and various other points in the interior of the Arctic regions. It was very abundant on the Arctic coast about Franklin Bay. The nests were generally alike, and all composed of a peculiar dark down. The eggs are of a uniform ivory-white colour, with a pink tinge, 2·30 inches in length by 1·60 in breadth."

To the above I may add, Messrs. Wedderburn and Hurdis state that it has been obtained at Bermuda, one having been killed on the 22nd of October 1854, and another on the 7th of October; and, according to Gosse, it has occurred in Jamaica.

When living in New Brunswick I had ample opportunities of observing the present species; for during the seasons of passage it was very numerous, though less so, as far as my experience goes, in the autumn than in the spring. In some seasons it occurs in great numbers. This was the case in 1862, when I spent a few days at Lepreaux Lighthouse, which is placed on a rocky point jutting out from the mainland into the Bay of Fundy. On my arrival there on the 25th of April, myriads of Ducks were flying past, among which Surf-Scoters were more numerous than any other species. They followed the line of the coast, at a short distance from the shore, and in passing the point generally steered close in, or flew over the end of the point itself. On the 26th I spent the day among the rocks; and I never recollect seeing water-fowl in such countless numbers as I did on that day, all wending their way northward. Velvet, Common, and especially Surf-Scoters, were the most numerous; but there were also many Eiders, Brent Geese, Long-tailed Ducks, with a few Harlequins, Great Northern Divers, and some others. The Surf-Scoters flew in large compact flocks, from eight to ten deep. I estimated the length of the flocks by watching them as they passed certain points, the distance between which was known

to me; and I thus found that one compact flock was at least half a mile in length, a second reaching from one point to another distant nearly a mile and a quarter. I made several telling shots amongst them, knocking over eight at one discharge, and six and four at a double shot, though I was only using a light fifteen-bore gun. I found them, however, very hard to recover; for during the time the dog was retrieving them, one or two were sure to come to and paddle off, and the sea was too rough to go out in a boat to pick up the cripples. The males proved to be far more numerous than the females, of which sex I only killed three during the whole day.

The Surf-Scoter much resembles the Velvet Scoter in its general habits, and, like that species, dives excellently, remaining for long under the water, and obtains it food chiefly by diving. Its flight is swift and powerful; and, as above stated, I have usually seen it in large flocks during passage.

I give above some notes, kindly communicated to me by Dr. Brewer, respecting the nidification of the present species in the Arctic regions of America; but Audubon obtained its eggs when collecting in Labrador, and shot the female as she rose from her nest. "For more than a week," he writes (B. of Am. vii. p. 49), "after we had anchored in the lovely harbour of Little Macatma, I had been anxiously searching for the nest of this species, but in vain; the millions that sped along the shores had no regard to my wishes. At length I found that a few pairs had remained in the neighbourhood; and one morning while in company of Captain Emery, searching for the nests of the Red-breasted Merganser over a vast oozy and treacherous freshwater marsh, I suddenly started a female Surf-Duck from her treasure. We were then about five miles distant from our harbour, from which our party had come in two boats, and fully five and a half miles from the waters of the Gulf of St. Lawrence. The marsh was about three miles in length, and so unsafe that more than once we both feared, as we were crossing it, that we might never reach its margin. The nest was snugly placed amid the tall leaves of a bunch of grass, and raised fully four inches above its roots. It was entirely composed of withered and rotted weeds, the former being circularly arranged over the latter, producing a well-rounded cavity six inches in diameter by two and a half in depth. The borders of this inner cup were lined with the down of the bird, in the same manner as the Eider Duck's nest; and in it lay five eggs, the smallest number I have ever found in any Duck's nest. They were two inches and two and a half eighths in length by one inch and five eighths in their greatest breadth, more equally rounded at both ends than usual, the shell perfectly smooth, and of a uniform pale yellowish or cream-colour. I took them on board, along with the female bird, which was shot as she rose from her nest. We saw no male bird near the spot, but in the course of the same day met with several males by themselves, about four miles distant from the marsh, as we were returning to the harbour. This induced me to believe that, like the Eider and other Ducks that breed in Labrador, the males abandon the females as soon as incubation commences."

I am indebted to the liberality of the authorities of the Smithsonian Institution of Washington for an egg of this Duck, obtained by Macfarlane on the Arctic coast east of Anderson river. In coloration and general appearance it resembles the eggs of the Velvet Scoter, but is smaller, measuring only $2\frac{18}{40}$ by $1\frac{30}{40}$ inch.

The specimens figured are an adult male and female, shot by myself at Point Lepreaux, in the Bay of Fundy, and are those above described.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.*, *b*, ♀ *ad.* Point Lepreaux, Bay of Fundy, April 26th, 1862 (*H. E. D.*). *c*, ♂ *ad.*, *d*, ♂ *jun.* Point Lepreaux, 1863 (*G. Thomas*). *e*, ♂ *juv.*, *f*, ♂ *jun.* Maces-Bay Ledges, Bay of Fundy, 1863 (*G. Thomas*). *g*, ♂ *ad.* Point Lepreaux, 1864 (*G. Thomas*). *h*, ♂ *ad.* Puget Sound, N.W. America (*Dr. C. B. Kennerly*).

E Mus. H. B. Tristram.

a, ♀. Bay of Fundy (*Wedderburn*).

Genus ERISMATURA.

Anas apud Scopoli, Ann. I. Hist. Nat. p. 65 (1769).
Platypus apud C. L. Brehm, Lehrb. eur. Vög. ii. p. 824 (1824).
Aythya apud C. L. Brehm, Vög. Deutschl. p. 909 (1831).
Erismatura, Bonaparte, Sagg. Distrib. metod. Agg. e Correz. p. 143 (1832).
Cerconectes apud Wagler, Isis, 1832, p. 282.
Undina apud Gould, B. of Eur. v. pl. 383 (1837).
Fuligula apud Degland, Orn. Eur. ii. p. 476 (1849).
Erimistura apud Bonaparte, Compt. Rend. xliii. p. 652 (1856).
Biziura apud Schlegel, Mus. Pays-Bas, Anseres, p. 11 (1866).

This genus consists of a few species, which are found in the Palæarctic, Ethiopian, Australian, Nearctic, and Neotropical Regions, one species inhabiting the Western Palæarctic Region. They are rather peculiar in their appearance, owing to their thick swollen bills and stiff tails, and form a very distinct group. They are essentially freshwater Ducks, usually frequenting the larger lakes, where they obtain their food by diving, being most expert divers; and when close pressed they prefer, like the Grebes, to seek safety by diving rather than by taking wing and flying away. Their flight is short and rapid; and they soon pitch again after being disturbed. They make their nest amongst the aquatic herbage on the borders of lakes, and deposit numerous white eggs, which are peculiar in having very coarse and rough shells.

Erismatura leucocephala, the type of the genus, has the bill rather longer than the head, broad, much swollen at the base and to beyond the nostrils; unguis rather small, elongated, oval, sharply hooked; the upper mandible overlaps the under one considerably; but the ends of the lamellæ are just visible; wings short, rather pointed, the first quill longest; tail long, rounded, the feathers very stiff, and each one separated from the next; tibia feathered to the joint; tarsus short, anteriorly scutellate; hind toe moderately long, broadly lobed; anterior toes long; interdigital membrane emarginate; claws rather long, curved, acute.



E.Neale lith.

Hanhart imp.

WHITE HEADED DUCK.

ERISMATURA LEUCOCEPHATA.

ERISMATURA LEUCOCEPHALA.

(WHITE-HEADED DUCK.)

Anas leucocephala, Scop. Ann. i. Hist. Nat. p. 65 (1769).
Anas mersa, Pall. Reise Russ. Reichs, ii. Anh. p. 713 (1773).
Platypus leucocephalus (Scop.), C. L. Brehm, Lehrb. Naturg. eur. Vög. ii. p. 824 (1824).
Aythya leucocephala (Scop.), C. L. Brehm, Vög. Deutschl. p. 909 (1831).
Erismatura, Bp. (*Anas leucocephala*, Scop.), Sagg. Distrib. metod. Agg. e Correz. p. 143 (1832).
Cerconectes, Wagl. (*Anas mersa*, Pall. &c.) Isis, 1832, p. 282.
Undina leucocephala (Scop.), Gould, B. of Eur. v. pl. 383 (1837).
Erismatura mersa (Pall.), Bp. Comp. List, p. 59 (1838).
Undina mersa (Pall.), Keys. & Blas. Wirbelth. Eur. p. 86 (1840).
Fuligula mersa (Pall.), Degl. Orn. Eur. ii. p. 476 (1849).
Erimistura leucocephala (Scop.), Bp. Compt. Rend. xliii. p. 652 (1856).
Biziura leucocephala (Scop.), Schleg. Mus. Pays-Bas, Anseres, p. 11 (1866).

Canard couronné, French; *Pato-tarro*, Spanish; *Gobbo rugginoso*, Italian; *Ruderente*, *Weissköpfige Ente*, German.

Figuræ notabiles.

Werner, Atlas, *Palmipèdes*, pl. 51; Naumann, Vög. Deutschl. taf. 315; Gould, B. of Eur. pl. 383; Shelley, B. of Egypt, pl. 12; Savigny, Descr. de l'Egypte, pl. 10. fig. 2; Bechst. Orn. Taschenb. pl. 36.

♂ *ad.* pileo centraliter nigro: fronte, capitis lateribus, mento et collo superiore cum nuchâ albis: collo imo nigro cincto: corpore suprà rufescenti-cervino, nigro vermiculato, uropygio saturatiore: uropygio imo et supracaudalibus castaneis: remigibus griseo-nigris, secundariis extùs et tectricibus alarum majoribus griseo-cervinis, nigricanti vermiculatis: tectricibus minoribus sordidè cinereis, indistinctè vermiculatis: caudâ nigrâ: gutture imo et pectore castaneis vix albo-cervino notatis: corpore reliquo subtùs albo-cervino, rufescente fusco indistinctè notato, hypochondriis sordidè castaneo-fuscis cervino tinctis et fusco vermiculatis: rostro pallidè ultramarino: iride fuscâ, pedibus nigricanti-plumbeis.

♀ *ad.* pileo et nuchâ nigro-fuscis vix castaneo tinctis: capitis lateribus eodem modo coloratis sed albo guttatis, striâ suboculari fere ad nucham ductâ albâ: mento et gulâ albis, nigro-fusco guttatis: corpore suprà sicut in mare colorato, sed saturatè castaneo nec rufescenti-cervino: corpore subtùs sicut in mare colorato: rostro sordidè plumbeo: iride fuscâ: pedibus nigricanti-plumbescentibus.

Adult Male (Zah, Transylvania, 16th May). Crown black; forehead, sides of the head, including the space above the eye, chin, and nape pure white; below this white the neck is black, with a few buffy brown

dots on the fore part; lower neck to the fore part of the back, except in the centre, chestnut-red, this colour extending to the fore neck and upper breast, where it is delicately marked with buffy white; back and scapulars ochreous or reddish buff; rump darker brownish, all finely vermiculated with blackish; lower rump and upper tail-coverts chestnut-red; quills greyish black, the secondaries externally and larger wing-coverts greyish buff, vermiculated with blackish grey; lesser coverts dull ashy, but slightly vermiculated; tail long and stiff, blackish in colour; underparts below the breast buffy white, obscurely marked with reddish brown; flanks dull chestnut-brown, tinged with warm buff, and vermiculated with darker brown; bill much swollen at the base, pale ultramarine-blue in colour; iris dark brown; legs dull blackish plumbeous. Total length about 17·5 inches, culmen 1·9, gape 1·82, wing 6·3, tail 4·3, tarsus 1·35.

Adult Female (Zah, 16th May). Differs from the male in lacking the clear white on the head, and in being much more rufous in plumage; crown and nape blackish brown with a chestnut tinge; sides of the head similarly coloured, but marked with white; a white streak passes below the eye nearly to the nape; and the chin and upper throat are white, slightly dotted with blackish brown; general colour of the upper parts darker than in the male, being deep chestnut-red; underparts as in the male; bill dull plumbeous; iris dark brown; legs plumbeous black.

Young (*fide* H. Ottó, Ibis, 1875, p. 428). Beak bluish black, with a swelling at the base; feet of a similar colour; plumage brown-black; from the base of the bill, under the eye, and continued over the ear a white stripe; chin with a broad outward curve back under the cheek white, so that the brown cheek appears bordered underneath by this curve, and above by the eye-stripe; belly dirty white, which colour loses itself in the sides; under the shoulder a light spot on both sides, which hardly shines through, and in many specimens is wanting; tail-feathers slit up and spread out like a fan.

Young in down (S. Europe). Crown, sides of the head, and upper parts generally sooty blackish brown with an olivaceous tinge; chin and a streak passing from the base of the bill below the eye nearly to the nape dull white; underparts sooty greyish with an olivaceous tinge; the breast darker than the rest of the underparts.

This Duck inhabits Southern Europe and North Africa, ranging eastward into Turkestan, but not visiting Persia. It but rarely straggles into the northern portions of the continent of Europe, and has not been met with in the British Isles, Scandinavia, North Russia, or Denmark; but it has been recorded from North Germany, though only as a rare visitant. Naumann says that it has occurred on both lakes in the Mannsfeld district, and that a pair have been met with in Schleswig; and Borggreve states that it has been observed in Upper Silesia by Gloger. It is not known to have occurred in Holland or Belgium; but Messrs. Degland and Gerbe cite several instances of its occurrence in France. Mr. Hardy, they say, purchased one in the Dieppe market early in January 1842; M. Bouteille obtained four in the market in Grenoble in January 1846; and a young example, killed in the south of France, was sent to M. de Lamotte. It is not recorded from Portugal; but it occurs in Spain. Colonel Irby says (Orn. Str. Gibr. p. 205) that it is found chiefly on the coast and on large lakes, and occurs near Cadiz, no doubt breeding in the country; but he never personally met with it on the Spanish side of the Straits of Gibraltar. Mr. Howard Saunders states (Ibis, 1871, p. 397) that it is "resident and common in the lower

marisma near San Lucar, where it breeds, but it is rare in the vicinity of Seville;" and he now informs me that his collectors in Spain have sent him many eggs of this species. In the south of France it is said to be of not unfrequent occurrence at the mouth of the Rhône; and though it is rather rare than otherwise in Northern Italy, it is resident, and tolerably abundant, in the Island of Sardinia; and in Sicily, though not numerous, it breeds in the marshes in the southern districts. Mr. A. B. Brooke, who met with it in Sardinia, writes (Ibis, 1872, p. 343) as follows:—"I frequently saw this bird near Oristano in company with large flocks of Tufted Ducks &c., but never succeeded in securing a specimen. They were not numerous, and seemed to go singly or in pairs; and I never saw more than two together, more frequently single birds. I watched a fine old male one day, for a long time, feeding by himself in the middle of a small lake, but always safely out of shot; he was diving strongly and vigorously, dashing himself under the water, where he remained a considerable time." Mr. C. Bygrave Wharton, in his notes on the ornithology of Corsica, says that he only saw it once on Lake Bigulia, on the 8th of March, in company with Coots, Tufted Ducks, &c. Dr. Krüper says that it is rare in Greece; there are examples in the museum at Athens obtained on the 14th and 20th February in Attica; but Lord Lilford speaks of it (Ibis, 1860, p. 354) as being common and, he believes, resident on the Lake of Butrinto and on the lagoons of Nicopolis. In South-east Europe it is not uncommon; there are specimens in the Vienna Museum from the Neusiedler lake and from Austria; and Messrs. Danford and Harvie-Brown, who met with it in Transylvania, write (Ibis, 1875, p. 427) as follows:—"This curious bird, which we found in the Mezöség, is not very common. We met with a flock of nine or ten birds at a small reedy lake near Záh; but, owing to the difficulty of paddling the wretched square-ended canoes or punts (*csónak*), the only substitutes for boats in the country, we found great difficulty in getting near them, and for some days only succeeded in shooting one male, and that at a very long range. A couple of days before our departure, however, we were more fortunate; the birds were tamer, and let us get a number of long shots, by which we killed three more males and a female. They never attempted to leave the lake, but after a short, rapid flight pitched again, generally about the same place. They swam very fast, keeping their stiff Woodpecker-like tails erect at right angles with the body, and when wounded, though they dived constantly, showed no disposition to escape, like other Ducks, by hiding among the reeds, but, on the contrary, avoided them. The bill of the male, when newly killed, is of a beautiful pure ultramarine, this colour extending even to the interior of the mouth. It soon fades, being merely connected with a thin, easily moved membrane; and in twenty-four hours the bill loses its brilliant appearance, turning to a brownish grey. We were too early for their nesting, but were assured that they bred in this district, probably at the lake where we found them. In the Klausenburg Museum are some young birds sent from Gyéké, and also some adults got there by the curator of the Museum, Herr Klir. Writing of this species as observed by him in the Mezöség (A Mezöség II. A Mezö-Záh &c.), Herr Ottó says:—'They came in April, went away for a short time, and returned in May; nested among the thick reeds in the lake at Záh; in the first half of June had five young (chicks), three of which were taken.' He compares the look of the bird, when swimming, to the double-peaked Hungarian saddle. Graf Lázár also procured two unfledged birds in the Tartaria march, and a young bird at Benczencz." Messrs. Elwes and

Buckley say that they obtained a female shot by Mr. Robson on the Bosphorus, where, the latter says, it is rare, but it breeds in the marshes at the mouth of the Danube, whence Dr. Cullen has sent its eggs. In Southern Russia it appears to be common on the Lower Volga, near Sarepta, whence numbers of skins and eggs are sent to the German dealers; but Professor von Nordmann says that it is rare about the Black Sea. Dr. Krüper writes that it occurs not unfrequently in Asia Minor; and Canon Tristram met with it on the Sea of Galilee in March, where it appears to be common.

In North Africa it is common, but does not range far south. Von Heuglin says that he is not sure if it breeds in Egypt; but it is found in the winter and spring in the lagoons of the Delta, usually in pairs. In December 1864 an old male was shot in a half-dried canal near Qata, north of Cairo. Captain Shelley (B. of Egypt, p. 291) writes, it "is tolerably plentiful in Lower Egypt; but I am not aware of its having been met with on the Nile above Cairo. Its favourite haunts are the great brackish-water lakes of Mareotis and Menzaleh; and it is probably to be met with in the Fayoom, though I do not know of an instance of its capture there. It is an extremely good diver, and prefers to keep to the water instead of taking to flight, unless very closely pursued. I only met with it alive on one occasion, on Lake Mareotis, when I shot one on the water, believing at the time that it was wounded. I have also seen it occasionally in the Alexandrian market." On the west side of North Africa, and all along the northern shores, this Duck appears to be found. In Algeria it is tolerably common and resident on the great lakes. Mr. O. Salvin says (Ibis, 1859, p. 364) that he found it common in the lagoon of El Baheira, and afterwards saw it at Djendeli and Zana; and Dr. Tristram met with in June 1856 at the lake of Bou Guizoun, and in December at Tuggurt. According to Favier (*fide* Colonel Irby, *l. c.*) "this species occurs near Tangier on passage, passing north during April, and returning to winter further south in October. Some of the spring migrants remain in the country to breed in June, laying as many as ten pure-white eggs. This Duck is not at all regular in its appearance, but in some seasons is quite common."

To the eastward the present species is found as far as Turkestan, where, Dr. Severtzoff says, it breeds and is seen on passage; but further east than this I cannot with certainty trace it.

The White-headed Duck appears to be essentially a freshwater species, frequenting the larger lakes and lagoons in places where it finds ample opportunities for concealment. It is said to dive excellently, and to seek safety when alarmed, not by taking wing, but by diving like a Grebe, keeping often for a long time under water; and Canon Tristram, who had a good opportunity of studying its habits in Algeria, says in its mode of flight and general habits it much more resembles a Grebe than a true Duck.

The eggs of this Duck differ widely from those of any other European species, being peculiarly rough and coarse in texture of shell. It breeds in the south of Europe and in North Africa, making its nest amongst the reeds or sedge, and depositing from seven to nine eggs. I possess specimens from Southern Europe, which are large for the size of the bird, dull white in colour, and, as above stated, are very coarse in texture of shell.

The specimens figured are an old male and female from Transylvania, for the loan of which I am indebted to C. G. Danford, Esq.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂ *ad.*, *b*, ♂ *juv.* Sarepta, Volga (*Dr. Stader*).

E Mus. Brit. Reg.

a, ♂ *ad.* Odessa. *b*, *c*, ♂ *ad.*; *d*, ♂ *juv.*; *e*, ♀, *f*, ♀, *pulli.* Southern Europe.

E Mus. C. G. Danford.

a, ♂, *b*, ♀. Záh, Transylvania, May 16th (*C. G. D.*).

Genus MERGUS.

Merganser apud Brisson, Orn. vi. p. 231 (1760).
Mergus, Linnæus, Syst. Nat. i. p. 208 (1766).
Mergellus apud Selby, Cat. Gen. & Subg. of Birds, p. 47 (1840).

The Goosanders differ chiefly from the true Ducks in having a very slender, toothed bill, and in feeding almost entirely on fish. They inhabit the Palæarctic, Oriental, Australian, Nearctic, and Neotropical Regions, being but rare stragglers in the northern portions of the Ethiopian Region.

Three species are constant residents in the Western Palæarctic Region; and a fourth, *Mergus cucullatus*, has also been included in the European list; but after a careful examination of the records of its reported appearance, I find that they are, as a rule, so doubtful that I have deemed it best to exclude it. The male of this bird is easily recognizable by its full, flat, black crest, in which there is a large fan-shaped patch of white.

The Mergansers frequent both salt and fresh water, are shy and wary in their habits, fly swiftly and well, and are extremely expert divers, preferring when pursued to seek safety by diving, and will frequently remain for long under water. They swim very fast; but, owing to their legs being placed so far back, they are clumsy walkers. They feed chiefly on fish, which they capture under water; but they also feed on larvæ of water-insects, worms, frogs, &c. They nest in hollow trees or on the ground, their nest being a collection of down intermixed with twigs, grass, and moss; and they deposit numerous creamy buff, creamy white, or pale greenish-buff eggs.

Mergus merganser, the type of the genus, has the bill longer than the head, slender, nearly straight, higher than broad at the base, tapering towards the tip; unguis oblong, as broad as the mandibles, abruptly decurved; the edges of both mandibles furnished with tooth-like lamellæ; nostrils oblong, placed in the anterior part of the nasal sinus; trachea composed of well-ossified rings, having a large dilatation at the lower extremity, partly bony, partly membranous; bronchi wide, and of about twenty rings; wings short, pointed, the first quill longest, the inner secondaries elongated, tapering; tail rather long, rounded; legs rather short, placed far aft; tarsus anteriorly scutellate; hind toe small, elevated, broadly lobed; anterior toes long; claws small, slender, compressed, slightly arched, acute.



J. G. Keulemans del.

Mintern Bros. imp.

MERGUS MERGANSER.
GOOSANDER.

MERGUS MERGANSER.

(GOOSANDER.)

Merganser, Brisson, Orn. vi. p. 231, pl. xxii. (1760).
Merganser cinereus, Brisson, tom. cit. p. 255, pl. xxv. (1760).
Mergus merganser, Linn. Syst. Nat. i. p. 208 (1766).
Mergus castor, Linn. tom. cit. p. 209 (1766).
Mergus gulo, Scop. Ann. I. Hist. Nat. p. 69 (1768).
Le Harle, Buff. Hist. Nat. Ois. viii. p. 267, pl. 23 (1781).
Mergus rubricapillus, Gmel. Syst. Nat. i. p. 545 (1788).
Merganser raii, Leach, Syst. Cat. M. & B. Brit. Mus. p. 36 (1816).
Merganser gulo (Scop.), Leach, ut suprà (1816).
Mergus leucomelanus, Schrank, Faun. Boic. i. p. 238 (1798), fide Koch, Baier. Zool. i. p. 290 (1816).
Merganser castor (L.), Bp. Comp. List, p. 59 (1838).
Mergus orientalis, Gould, Proc. Zool. Soc. 1845, p. 1.
Mergus americanus, Cass. Pr. Phil. Acad. 1853, p. 187.

Siolta bheag, Gaelic; *grand Harle*, French; *Smergo maggiore*, Italian; *grosser Säger*, *Gänsesäger*, German; *groote Zaagbek*, Dutch; *Stor Skallesluger*, Danish; *Stor Fiskand*, Norwegian; *Storskrake*, Swedish; *Unkoskelo Isokoskelo*, Finnish; *Krahal bolshoy*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 951, 953; Werner, Atlas, *Palmipèdes*, pl. 60; Kjærb. Orn. Dan. taf. L.; Frisch, Vög. Deutschl. taf. 190, 191; Fritsch, Vög. Eur. taf. 51. fig. 9, and 52. fig. 2; Naumann, Vög. Deutschl. taf. 326; Sundevall, Svensk. Fogl. pl. 64. figs. 1, 2; Gould, B. of Eur. pl. 384; id. B. of G. Brit. v. pl. 34; Schlegel, Vog. Nederl. pls. 318, 319; Roux, Orn. Prov. pls. 352, 353; Audub. B. of Am. pl. 411; Wilson, Am. Orn. pl. 68. figs. 1, 2.

♂ *ad.* capite et collo nigris viridi-nitentibus, pilei et nuchæ plumis elongatis: collo imo albo: dorso et scapularibus nitidè nigris purpureo tinctis, illo in parte superiore albo et nigro notato: uropygio, supracaudalibus et caudâ saturatè cinereis, hâc saturatiore: rectricibus centraliter nigro-fuscis: remigibus primariis nigris vix cinereo tinctis, secundariis albis nigro marginatis, sed intimis dorso concoloribus: tectricibus primariorum nigricanti-cinereis, margine alæ saturatè nigro-cinereo albo variegato: tectricibus alarum reliquis albis: corpore subtùs albo, pectore et abdomine pallidè rufescente cervino tinctis: subcaudalibus cinereo lavatis: rostro rubro: iride rufescenti-fuscâ: pedibus rubris.

♀ *ad.* mari dissimilis: capite et collo superiore, mento excepto, ferrugineis, pileo et nuchâ saturatioribus, pilei et nuchæ plumis elongatis: corpore suprà cum tectricibus alarum, scapularibus, secundariis

intimis et caudâ cærulescenti-cinereis vel schistaceo-cinereis, plumis centraliter nigro-fuscis: remigibus primariis nigris cinereo tinctis, secundariis albis ad basin nigris: corpore subtùs albo, hypochondriis vix cinereo notatis: rostro, iride et pedibus ut in mare coloratis, sed paullo sordidioribus.

Adult Male (Archangel). Head and upper part of the neck black, glossed with bottle-green, the occipital feathers elongated; lower part of the neck and upper part of the back white, the latter marked with black; back and scapulars glossy black, with a purplish tinge, lower part of the back, rump, upper tail-coverts, and tail dark ashy, the tail darkest, the shafts of the feathers blackish brown, and the centre of the feather darker; primaries black, with an ashy tinge; secondaries white, with a narrow black edging, the innermost secondaries glossy black, like the scapulars; primary-coverts blackish grey, the edge and the base of the wing being also blackish grey varied with white; rest of the wing-coverts pure white; underparts white, on the breast and abdomen tinged with warm reddish buff; under tail-coverts washed with grey; bill deep vermilion-red, the ridge of the upper mandible and the tooth blackish; iris deep reddish brown; legs vermilion-red. Total length about 25 inches, culmen 2·4, gape 3·0, wing 11·0, tail 5·0, tarsus 1·9.

Adult Female (Cookham, Berks, December). Crown, nape, sides of the head, and upper neck (except the chin and a space down the front of the neck for a short distance) deep rusty, darker on the crown and nape; feathers on the crown and nape much elongated, forming a crest; hind neck and upper parts generally, including the inner secondaries, scapulars, and wing-coverts ashy slate-grey, many of the feathers with dark shafts; primaries black, with a greyish tinge; secondaries white, with only the concealed base of the feathers black; tail coloured like the back; chin, lower neck, and underparts white, on the flanks slightly marked with light slate-grey; soft parts as in the male, but not quite so brightly coloured. Culmen 2·2, gape 2·5, wing 10·0, tail 4·6, tarsus 1·75.

Young. The immature birds resemble the female very closely, but have the crest much less developed, and the head is not so richly coloured; the colour of the upper parts is also duller, and not of the clear light slate-grey or blue-grey tinge that pervades this part of the plumage of the old female.

Old Male in summer dress. Like almost all the Ducks, the old male Goosander assumes after the pairing-season a dress which may be termed its summer plumage, which is worn but a short time and is therefore comparatively little known. I do not possess a specimen in this dress to describe, and therefore translate Naumann's careful description (Vög. Deutschl. xii. p. 364) as follows:—"Resembles the young male; the nape is furnished with a full, almost double, crest; upper part of the head and hind neck dark brown, the sides of the head and neck rust-brown, becoming white on the throat; lores and a somewhat indistinct ring below the brown on the neck, and dividing it from the white, blackish brown; the lower fore part of the neck pure white, the corresponding part on the hind neck slate-grey; breast light slate-grey, marked with white; flank-feathers slate-grey, edged with bluish white, and indistinctly marked with black making irregular wave-lines; rest of the underparts white with a yellowish red tinge; upper parts of the back and shoulders slate-black, lower back and rump lighter, or only slate-grey; tail slate-black; upper edge of the wing and basal portion greyish black; entire wing-coverts and speculum white; the three next feathers to those forming the latter white on the outer web, and margined with black; the last of the tertiaries light slate-grey, the shafts and an edging black; primaries and the three outer secondaries black.

The range of the Goosander is very extensive, as it occurs throughout the entire Palæarctic and Nearctic Regions, passing the summer in the north and migrating southward during the winter.

With us in Great Britain it occurs chiefly during the winter season, and is more frequently

seen in the north than in the southern counties. But there is no doubt that it does occasionally remain to breed in Scotland; for Mr. Harvie-Brown has had a nest of eggs sent to him from the north of Perthshire, and from an examination of one of these eggs and some down I have no doubt that they really were Goosander's. The eggs were taken late in May 1871; and the nest was placed in the hollow of a tree. Macgillivray also says that it breeds in the Outer Hebrides, close to the larger lakes, and occasionally by the sea.

In the southern counties it is met with in hard winters, and is an occasional visitant to all parts where there are suitable localities. Mr. Cecil Smith informs me that in Somersetshire it is "an occasional autumn and winter visitant, both on the coast and inland. I think it is rather the more common of the two; I have certainly seen more specimens of full-plumaged males. In South Devon also it appears much the more common of the two, especially about the mouth of the Exe, where considerable flocks may be seen, either on the wing or busily engaged in diving for food. The whole flock, however, never seem to be down together; so there is no chance of stealing a march on them by trying to sail or row up close whilst they are diving; consequently, as they are rather wary birds, it is no easy matter to get a shot at them on the open sea or river. In Guernsey, I think, they seem to make their appearance in about the same numbers as the Red-crested Mergansers. In spite of the strong tides and rough sea, they seem to keep the open water in all weathers; for in November 1871, as I was returning from Guernsey to Southampton in the steamer, I saw a flock of Goosanders on the water who did not seem the least discomposed by a very heavy breaking sea which was running at the time, and which made the steamer dip first one paddle-box and then the other in the white water; the Goosanders, however, seemed perfectly at home, and rose and flew off for a short distance as the steamer came near them." I have seen it off the coast of Sussex; and examples are now and then obtained in Kent, Essex, and Norfolk. Mr. Cordeaux mentions that it not unfrequently occurs near Beverley, in Yorkshire, in the winter, visiting the river Hull in small flocks, but is more common in some seasons than in others, and is especially numerous in very severe winters. In Scotland it is stated by Mr. Robert Gray to be more numerous than *M. serrator* in the western counties during winter; and he says that flocks of ten or twelve are sometimes seen together on streams within a few miles of Glasgow. In some of the west-coast lochs, and in one or two districts of Perthshire, it lingers until April and then disappears. Dr. Dewar found it breeding in North Uist in 1858. Dr. Saxby states (B. of Shetl. Isl. p. 271) that it is well known in Orkney, where it is a regular winter visitant, but it is very rarely observed in Shetland.

In Ireland it is an annual winter visitant; but Thompson says that it occurs in very limited numbers, and is chiefly seen on freshwater ponds or streams. It is not known to have occurred in Greenland; but in Iceland it is tolerably common, and many remain during the winter, collecting in large flocks on the small fjords and warm springs. It breeds most commonly in Northern Iceland, usually on the banks of the rivers. In the Færoes it is rare, and Mr. H. C. Müller only records one instance of its occurrence, in March 1854; but Mr. Benzon informs me that he possesses an egg taken in the Færoes in April 1858. It is a common bird in Scandinavia; and Mr. Robert Collett states that in Norway it occurs most frequently in the lakes and rivers in the southern and south-eastern districts, and in the fell-valleys of Christiania it is commoner

than the Red-breasted Merganser. I have met with it in Sweden throughout the country as far up as Torneå; and it is stated to breed far up in Lapland, where it is not uncommon. Dr. Palmén says that it is common in Finland during passage, but not so very numerous during the breeding-season, at which season it is chiefly found in the interior and northern parts. I observed it frequently in different parts of the country north of Åbo, and obtained a considerable number of its eggs near Uleåborg during the spring I collected near that town.

In Russia it is common in the northern governments, and I have received many specimens from Archangel, where, I am told, it is very numerous. Sabanäeff says that it breeds in the Government of Tver, and is common on the Northern and Central Volga. He met with it in the Ural, where, he says, it breeds in the Perm Government, and is common on the south-western slopes of the Ural range.

In North Germany it is, as a rule, a winter visitant; but it has been found breeding in Pomerania, and Dr. C. Vangerow states (J. f. O. 1855, p. 345) that on two occasions the female bird was caught on her eggs near Berlin. In Denmark it occurs sparingly, Mr. Benzon informs me, in all the provinces, in localities where the forest is close to the water, and remains to breed, nesting in hollow trees. It has, he writes, "many local names,—the commonest of which is *Stor Skallesluger*; but it is also called *Gul Skallesluger*, *Gulskræp*, *Skrokand* (in Falster), *Gul spids nœbbet And*, sometimes *Skörand*, and erroneously *Havgasse*, which last is really the name of the Great Northern Diver." It visits Belgium and Holland in the autumn, and remains there throughout the winter, frequenting the sea-coast and unfrozen waters during the cold weather. Mr. Labouchere informs me that large flocks are often seen on the Dutch coast during severe winters; and Baron von Droste Hülshoff writes that it is not rare in East Friesland from December to March, and he has observed it as late as the end of April or early in May on the sea-coast. It does not, however, he adds, frequent the salt water so much as the rivers and freshwater ponds or sheets of water in the interior. It sometimes occurs on the Island of Borkum, but only after heavy storms. In France it is tolerably common on passage and in winter, when it is often seen on inland sheets of water; and it passes through Provence and Savoy during migration, but is somewhat rare in Southern France. I have no data respecting its occurrence in Portugal; but Professor Barboza du Bocage includes it in his list. It is stated by Mr. Howard Saunders (Ibis, 1871, p. 397) to occur in Spain during winter, especially at the Albufera; and Colonel Irby sends me a note to the effect that immature and young birds have occurred during winter in Southern Spain. All along the coasts of Southern Europe skirting the Mediterranean it is a rare bird, occurring only in the winter, chiefly in severe seasons. Salvadori speaks of it as being very rare in Italy, especially in the southern parts, as also in Sicily and Sardinia, and he writes (J. f. O. 1865, p. 326) that he has never seen but one Sardinian-killed example, which is now in the Museum at Cagliari. It is doubtful if it has really occurred at Malta; and Lord Lilford says that it is an uncertain and rare visitor in Epirus. Erhardt did not meet with it in the Cyclades; but Lindermayer states that it is met with during severe winters in Greece.

In Southern Germany it is a tolerably regular winter visitant; and Dr. A. Fritsch says that both old and young birds are obtained in Bohemia during the cold weather. When on the Danube I was assured that it occurs there regularly; and Messrs. Elwes and Buckley state

(Ibis, 1870, p. 340) that it is not uncommon in Turkey, and is occasionally found on the Bosphorus during winter.

In Southern Russia it is of rare occurrence, and, Professor von Nordmann states, is only found in the districts bordering the Black Sea during severe weather. I do not find it recorded from Asia Minor; and Canon Tristram does not appear to have met with it in Palestine. It has not been met with in North-east Africa, but has been, though rarely, in North-west Africa. Loche states that it only visits Algeria during the most severe winters; and Colonel Irby writes (Orn. Str. Gibr. p. 206) as follows:—"The Goosander is recorded by Favier as having been once obtained by him near Tangier in October 1862. I saw another, which had been found dead on the shore near that town, during the winter of 1869–70, the only instance in which I met with the species."

To the eastward the Goosander occurs across Asia to Japan. Mr. Blanford did not, however, meet with it in Persia; but Dr. Jerdon writes (B. of India, ii. p. 818) that in India it is chiefly met with "on rivers within the Himalayas in small parties. I have frequently seen it on the Great Kungeet, in Sikkim, and also in rivers in Kumaon, and on the Ganges at Hurdwar. One instance only is recorded of its occurrence in Central India, it having been procured by Tickell at Chyebassa. Captain Smyth recently gave me two very large concretions found in one of these birds, but I have not yet had them examined." Mr. A. O. Hume writes (Stray Feathers, i. p. 423) as follows:—"Amongst a collection of birds recently sent me by my kind friend Mr. F. R. Blewitt, I was surprised to find no less than nine specimens of *M. merganser*, which he had shot in the Mahanuddee, in the Sumbhulpoor district of the Central Provinces. Years ago Colonel Tickell procured a single specimen at Chyebassa; but with this exception the Merganser has never hitherto been observed many miles out of the Himalayas, or in any but rivers running through these mountains." Dr. Henderson met with it on his journey from Lahore to Yarkand, and writes (Lahore to Yark. p. 297) as follows:—"A young half-fledged Merganser was caught in the Indus near Lé, in July 1870. It was kept alive for some days;" to which Mr. A. O. Hume adds the following note:—"The bird probably breeds in Ladák, both in the valley of the Indus and the Shyok, as it does in almost all our Northern Indian rivers, high up in the Himalayas, and more or less near their sources. As the winter comes on they drop down stream, and are to be found during the cold season in small parties in almost every large stream that debouches from the Himalayas, just where it leaves the hills." Severtzoff says (Turk. Jevotnie, p. 70) that it is found throughout Turkestan, and breeds throughout the eastern portion of the country, being also met with during winter. He met with it at this latter season on the lakes in the mountains to an altitude of about 4000 feet, and found it breeding as high as about 8500 feet above the sea-level. The Siberian travellers all met with it; Von Middendorff obtained it in the Stanowoi Mountains; Dr. Radde, who says that it was much rarer than *Mergus serrator*, saw it on several occasions in the Irkutsk market; and Von Schrenck states that it is not rare in the Amoor country. He observed it first on open places on the Amoor and Patcha on the 5th May, and was assured by the natives that it often remains throughout the winter on the Tymy river, though it not unfrequently happens that the mercury freezes there. Dr. Dybowski states that he found it not uncommon in Darasun; Père David says that it is common in Mongolia; and Mr. Swinhoe speaks of it as found throughout China, and occurring

as far down as Amoy in the winter. In the markets of Tientsin, he says (P. Z. S. 1863, p. 323), it is abundant, and he believes that it remains over the summer in the large marshes in that vicinity. Messrs. Temminck and Schlegel also record it from Japan, which country it is said to visit during passage. In the Nearctic Region it is very generally distributed throughout North America, breeding in the northern portions, and straggling in the winter season as far south as Texas. It is stated to be generally distributed in the fur-countries. I frequently met with it in New Brunswick, where it breeds; but I do not find any data to show how far south its breeding-range extends. In the winter it is found at least as far south as Texas; for when there I received specimens from Fort Stockton; and Dr. Finsch states (Abh. naturw. Ver. Brem. iii. p. 72) that it ranges as far south as Mexico. It extends right across the continent to the Pacific, and has been obtained in California. Lockhart obtained it at Fort Yukon; Bischoff procured it at Sitka; and Dall records it from the Aleutian Islands. The American Goosander was separated by Cassin (*l. c.*) from our European bird as being specifically distinct; but later authors do not treat it as separable: and in this latter view I fully concur; for I have carefully compared examples from both continents, and can trace no difference whatever.

In its habits the Goosander differs but little from the Red-breasted Merganser. Like that species it feeds almost entirely on fish, which it catches with great skill, and is an excellent diver, remaining often for some time under the surface of the water, and moving about at some depth with ease and considerable swiftness. I have often watched Goosanders fishing in the Gulf of Bothnia and the lakes in Northern Finland, as well as in New Brunswick, and have observed that they remain under water as long as the Golden-eye. Those I have dissected had been feeding entirely on fish; but it also feeds on various kinds of water-insects and larvæ, and it is stated to eat frogs. I have never seen it fishing in company forming a half-circle and driving the fish in a small bay or inlet; but it is said to do so. Its flight is somewhat heavy and not very swift, but direct; and it frequently flies at a considerable height. It does not seem to rise from the surface of the water with ease, but flaps along the surface for a short distance before rising into the air. Its cry is loud and harsh, and is most frequently heard when the bird rises on the wing. It appears, as a rule, to prefer the fresh water to the sea-coast, and is more frequently met with on inland water, especially during the breeding-season. It breeds late in April or early in May, and makes its nest in the vicinity of water, either on the ground or else it uses the hollow of a tree, the latter being, so far as I know, the usual place selected by this species for the purposes of nidification; and it frequently deposits its eggs in the nest-boxes hung up by the peasantry in the north of Scandinavia and Russia. When at Uleåborg, however, I obtained eggs from nests on the ground, in a hollow scratched out and filled with down. When it nests in a tree it frequently makes use of a suitable hollow at some altitude from the ground, and fills it with a considerable quantity of down, on which the eggs are deposited. When the young are hatched they are carefully carried by the female bird in her bill down to the water; and these young birds are able at once to swim, and even dive, with ease. Mr. Benzon, who informs me that in Denmark it nests in hollow trees near fresh water, writes as follows:—"It makes a bed for its eggs of a large quantity of greyish white down, amongst which are occasionally found husks of the buds of *Fagus sylvestris*; and the eggs are usually deposited late in April or early in May, the number being from eight to twelve. In colour they are warm

yellowish white, very smooth in grain, and measure from 66 by 46 to 73 by 47 millimetres. I possess Danish-taken eggs from Bognæs, on the Isefjord, taken in 1872; from Fuglsang, in Laaland, taken in 1858 and 1859, in which latter year two pairs bred in that locality." Eggs of the Goosander in my collection, from Sweden, and collected by myself in Finland, are in colour rich cream or creamy buff, very smooth in texture of shell, and in size average about $2\frac{26}{40}$ by $1\frac{32}{40}$ inch. The down in which they are deposited is greyish white.

The specimens figured are an adult male from Archangel, and an old female from Cookham, Berkshire, both in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♀ *ad.* Cookham, Berkshire, December (*Ford*). *b*, *c*, ♂. Glinnie, Archangel, May 13th, 1874 (*Piottuch*). *d*, ♀. Ijma, Archangel, September 3rd, 1873. *e*, *f*, *juv.* Albania (*H. Barclay*). *g*, ♀. Shanghai, China, March 1869 (*R. Swinhoe*). *h*, ♂. Bullen Marsh, St. John's, New Brunswick, April 10th, 1862 (*H. E. D.*).



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RED-BREASTED MERGANSER.
MERGUS SERRATOR

MERGUS SERRATOR.

(RED-BREASTED MERGANSER.)

Merganser cristatus, Brisson, Orn. vi. p. 237, pl. xxiii. (1760).
Mergus serrator, Linn. Syst. Nat. i. p. 208 (1766).
Mergus albellus, Scop. Ann. I. Hist. Nat. no. 89 (1769, nec Linn.).
Mergus serratus, Gm. Syst. Nat. i. p. 546 (1788).
Mergus niger, Gm. ut suprà (1788).
Mergus leucomelas, Gm. ut suprà (1788).
Merganser cristatus, Leach, Syst. Cat. Mamm. & B. Brit. Mus. p. 36 (1816).
Merganser serrata, Steph. in Shaw's Gen. Zool. xii. p. 165 (1817).
Merganser serrator (L.), Bp. Comp. List, p. 59 (1838).

Le Harle huppé, French; *Merganso*, Portuguese; *Mergo cristado*, *Serreta*, Spanish; *Smergo minore*, Italian; *der mittlere Säger*, German; *Zaagbek*, Dutch; *Toppet Skallesluger*, *Topskrække*, Danish; *Topandt*, Færoese; *Siland*, *mindre Fiskand*, Norwegian; *Pracka*, *Småskrake*, Swedish; *Koskelo*, Finnish; *Krahal dlinnonosoy*, Russian.

Figuræ notabiles.

Edw. Nat. Hist. pl. 95; D'Aubenton, Pl. Enl. 207; Werner, Atlas, *Palmipèdes*, pl. 61; Kjærb. Orn. Dan. taf. L.; Fritsch, Vög. Eur. taf. 52. figs. 1 & 4; Naumann, Vög. Deutschl. taf. 325; Sundevall, Sv. Fogl. pl. LXIV. figs. 3, 4; Gould, B. of Eur. pl. 358; id. B. of G. Brit. v. pl. 35; Schlegel, Vog. Nederl. pl. 320; Roux, Orn. Prov. pl. 354; Audubon, B. of Am. pl. 412; Wilson, Am. Orn. pl. 69. fig. 2.

♂ *ad. ptil. hiem.* capite et collo superiore velutino-nigris purpureo et viridi nitentibus, pilei plumis valdè elongatis cristam formantibus: dorso, scapularibus et secundariis intimis elongatis nigris, primariis brunnescenti-cinereis in pogonio interno pallidioribus; secundariis, tectricibus majoribus et medianis albis, secundariis in pogonio externo nigro marginatis, et tectricibus alarum majoribus ad basin nigris, tectricibus minoribus brunnescenti-cinereis: uropygio fuliginoso-brunneo, vix albo striato: supracaudalibus et uropygio imo albis nigro vermiculatis: caudâ fusco-cinereâ, vix pallidiore marginatâ: pectore superiore rufescente, striis nigris maculato, pectore imo et abdomine pallidè cervinis: hypochondriis albis, nigro vermiculatis: plumis juxta alæ flexuram utrinque nigris, centraliter maculâ ovali notatis, aut albis nigro marginatis: rostro et pedibus miniatis: iride rufescente.

♀ *ad.* mari dissimilis, minor: capite, cristâ et colli lateribus rufescentibus: corpore suprà fuscescenti-cinereo, marginibus pennarum cinereis: remigibus, tectricibus primariis et secundariis intimis fusco-nigris, secundariis centralibus albis ad basin nigro-fuscis: tectricibus majoribus valdè albo apicatis, tectricibus minoribus saturatè cinereis: corpore subtùs albo, pectore superiore cinereo lavato, hypochondriis fuliginoso-cinereis.

Adult Male in winter (Leadenhall Market, November). Head and upper neck velvety black, glossed with

purple, except on the sides of the head, where the reflections are bottle-green; feathers on the crown and nape very narrow and elongated, forming a conspicuous crest; central portion and upper part of the lower neck pure white, with a narrow line of black behind; back, scapulars, and elongated inner secondaries velvety black, with purple reflections, a narrow portion on the fore part of the back reddish brown marked with black; primaries dark brownish grey, lighter on the inner web; secondaries, larger and median wing-coverts white, the secondaries on the outer web bordered with black, and the larger wing-coverts black at the base, forming a line across the wing; smaller coverts ashy brown, lower rump and upper tail-coverts white, narrowly vermiculated with black, the upper part of the rump being sooty brown, here and there vermiculated with white; tail dull greyish brown, with rather lighter edges; upper part of the breast pale reddish brown, marked with blackish brown, upper part of the flanks glossy black, the feathers having oval white centres, or all, except a broad margin white, rest of the flanks white, vermiculated with black; rest of underparts very pale delicate reddish buff, which fades nearly to white soon after death; bill bright vermilion, with the unguis black, the ridge of the upper mandible dusky; iris bright red; feet bright vermilion, the claws reddish at the base and grey towards the end. Total length about 22 inches, culmen 2·4, wing 9·5, tail 3·1, tarsus 2·0.

Adult Male in summer. In the plumage that the male of this species assumes for a short time during the summer it resembles the female, but is distinguishable by its larger size, the different colour of the abdomen, and of the scapulars.

Young Male. Closely resembles the female, especially when the latter is in fresh plumage with a greyish tinge, but can usually be distinguished by its larger size and shorter crest.

Adult Female (Archangel, 14th May). Head and neck dull reddish brown, darker on the crown; chin and throat, except at the sides, dull white; crest elongated, but less so in the centre than above and below; back and upper parts generally dark ash, with rather paler margins to the feathers; primary quills, primary coverts, and inner secondaries brownish black; middle secondaries white, except at the base, where they are blackish brown; larger coverts broadly tipped with white; smaller wing-coverts dull dark grey; tail as in the male; underparts white, the lower fore neck tinged with grey; flanks sooty grey, some of the feathers tipped with fulvous; soft parts as in the male, but paler and duller. In size the female runs smaller than the male, measuring—culmen 2·3, wing 8·5, tail 2·7, tarsus 1·8.

This Duck, like the other European species of *Mergus*, has a very extensive range, being found in Northern Europe, Asia, and America during the summer, and, in the winter season, met with as far south as Northern Africa and China in the Palæarctic, and the Southern States of North America in the Nearctic Region.

In Great Britain it is chiefly found during the winter and autumn, though it occurs not uncommonly in some parts of Scotland during the breeding-season. It is met with in almost all parts of England, both on the coast and on inland waters, but does not appear to be anywhere very numerous. I have observed it both on the east and south coasts of England; and Mr. Cecil Smith writes to me from Somerset as follows:—"It is an occasional autumn and winter visitant, both on our coast and to inland waters; the greater number of Somerset specimens which I have seen have been young males not arrived at adult plumage, or females. I have also found this bird tolerably common in Guernsey in autumn and winter; on the 8th of November, 1871, I shot one out of a flock of five or six that flew over my head as I was scrambling over the rocks between Cobo and the Vale; and beautiful these birds looked as they flew up from the sea, their

delicately tinged breasts glistening in the bright sun, and in strong relief against a wild black rain-squall that had just passed. One or two more were brought into the bird-stuffer's whilst I was there; and he said he got a few every year. I did not, however, see any in the market; and as far as I could judge from the questions asked me by some fishermen and others who saw me carrying the bird I had shot home, it did not appear to be a very well known bird."

In Scotland it is, as above stated, found during the breeding-season; and Mr. Robert Gray writes (B. of W. of Scotl. p. 400) as follows:—"Although in the breeding-season this beautiful bird is shy and unobtrusive, it is well known as a native of nearly all the lakes of any importance north of Loch Lomond. It is likewise numerously distributed through Long Island, where it appears to be permanently resident, breeding on South Uist, North Uist, Benbecula, the islands in the Sound of Harris, and Lewis. Within the circle of the inner islands it is found breeding on rocky islets of Skye, Islay, Jura, Colonsay, and Tyree. I have seen large companies about the close of autumn swimming in the saltwater creeks which intersect the eastern side of North Uist, especially in the neighbourhood of Lochmaddy." In Shetland, Dr. Saxby says, it is abundant on all parts of the coast during winter, but it is not so often observed during the breeding-season.

In Ireland it is common during the winter, and also breeds there, but not commonly. Thompson (B. of Ireland, iii. p. 162) says that it breeds on some of the islands in Strangford Lough in the south of Ireland, and on Lough Neagh near Toome. It occurs in Greenland, and in Iceland is common and breeds numerously in most parts of the country where there are suitable localities, often, according to Faber, using holes in the earth for that purpose; and Captain Feilden speaks of it as found on the Færoes during the breeding-season. In Scandinavia it is a common species; and Mr. Robert Collett informs me that in Norway "it is general throughout the country, and breeds at all altitudes from the extreme south up to the North Cape, and is one of the few Ducks which breeds on the fresh water as well as on the sea-coast, along which latter it is resident, and winters commonly on the fresh-water lakes which are not frozen, and in the fiords up to the Varanger." Nilsson says that it is one of the very commonest Ducks found in Sweden, and is to be met with during the summer from the coast of Blekinge to Norrbotten, and from Bohus to the coast of Helgoland and Finmark. In Finland it is said by Dr. Palmén to be very common throughout the entire country, but less so in the interior than on the coast; and I met with it in every part of the country I visited during the summer season. It is, as a rule, a summer visitant, but a few remain over winter round the Åland isles; it usually arrives in Finland in April, and leaves in October. In Northern Russia it is common; and Von Heuglin met with it on Waigatch in September; but, according to Sabanäeff, it is, comparatively speaking, rather rare than otherwise in Central Russia, much more so than the Goosander. He met with both species on the south-western slope of the Ural. It occurs in Poland; but I am unaware if it has ever been met with there during the breeding-season.

Meyer says that it has not yet been found breeding in Livonia; but Borggreve, speaking of its distribution in North Germany, states (Vogelf. von Nord-Deutschl. p. 135) that it is to some extent a resident on the coasts of the Baltic, but found elsewhere only during the seasons of migration. Mr. Ludwig Holtz says (J. f. O. 1865, p. 188) that he met with it breeding on islands between Hiddensee and Rügen, as also on a sandy tongue of land on the latter island.

Throughout North Germany generally, especially on the large rivers, it is tolerably common during the winter season in suitable localities. Tobias writes (J. f. O. 1853, p. 218) that it is sometimes seen in Ober-Lausitz during the summer season also. On the Dutch coast, Mr. Labouchere informs me, it is found in large numbers during the winter; and Baron von Droste Hülshoff says that it often occurs on the coast of East Friesland, and is most numerous after the February and March gales, but is not seen during mild winters, nor has it ever, to his knowledge, been observed between April and November. Kjærbölling speaks of it as being very common on the coasts of Denmark in winter. Boje found it in Holstein breeding in old Crows' nests; and Faber caught a female on her eggs at Christianshavn. It also breeds on Veirö, Samsö, Hirtsholmen, as well as on several other islands. Mr. Petersen met the old bird with small young on Egholm, in the Great Belt, on the 18th July, 1847. In Belgium it is rarer than the Goosander, and is said to be but rarely met with on the inland waters; and in France it is, according to Degland and Gerbe, met with on the northern coasts during the winter, being less numerous there also than the Goosander; but in Provence and Southern France it is far the more numerous species; and Jaubert and Barthélemy-Lapommeraye say that they cannot understand Crespon's assertion to the contrary. In Portugal it is said by Professor Barboza du Bocage to be "common" during winter, and it is likewise met with in Spain at that season of the year. Colonel Irby informs me that in some winters (as, for instance, that of 1871–72) it is very common in the Bay of Gibraltar, the earliest being seen about the beginning of December, and the last about the end of January; and he remarks that he never met with an adult male. Mr. Howard Saunders also writes (Ibis, 1871, p. 397) that it is found in Southern Spain during the winter, especially at the Albufera.

To Savoy it is a comparatively rare visitor; but in Italy, Sicily, and Sardinia it is abundant in immature plumage during the winter season; and Mr. A. B. Brooke also refers to it (Ibis, 1873, p. 345) as being "common in winter in Sardinia." In Malta, Mr. C. A. Wright writes (Ibis, 1864, p. 156), "it is a well-known bird here, but is much rarer in some years than in others. It arrives in November; but I have seen it oftenest in December and January, when both immature and, very rarely, adult birds are met with." Lord Lilford found it not uncommon in winter in Epirus, Albania, and Corfu; and both Von der Mühle and Lindermayer speak of it as being a winter visitant to Greece, where, according to the former, it is rarer than the Goosander; and the latter says that it only visits Greece for a few days during the winter (when it is met with on the lakes and bays), is rare in the Peloponnesus, and is never met with on the shores of the Ægean Sea.

In Southern Germany it is met with sparingly during the winter; and the late Mr. Seidensacher informed me that he sometimes observed it at Cilli during midwinter. In Bohemia, according to Fritsch (J. f. O. 1872, p. 372), it is rarer than the Goosander, old males being very rarely met with; and he only cites one occurrence of an adult male, obtained by Mr. Lokaj at Rumburg. Messrs. Elwes and Buckley met with it not uncommonly on the Turkish coasts during winter; and Von Nordmann speaks of it as being tolerably numerous during severe weather on the coast of South Russia. Canon Tristram met with it commonly on the coast of Palestine; and Mr. C. W. Wyatt obtained it at Ain Musa, on the Sinaitic peninsula. But it is, Von Heuglin says, one of the rarest stragglers to North-east Africa; he himself never saw

it; but there is a female in the Leiden Museum collected by Dr. Clot in Egypt. In North-west Africa it is of accidental occurrence during winter; and Loche obtained it on Lake Fezzara.

To the eastward it is found as far as China and Japan, but does not appear ever to have been met with in India. Severtzoff did not meet with it in Turkestan, though he includes both the Goosander and the Smew in his list. Von Middendorff says that he observed it at the mouth of the river Uda, in the Sea of Ochotsk. Dr. Radde speaks of it as being one of the commonest species in Eastern Siberia, where it breeds. Late in May he found it in pairs in the Bureja Mountains, and in September he observed numbers of young birds on the river Onon; and Von Schrenck says that it is much more numerous than the Goosander in the Lower-Amoor country; and Mr. Maack observed it near the Schilka, on the Upper Amoor. According to Temminck and Schlegel it visits Japan in considerable numbers; and Mr. Swinhoe says that it is found throughout China; but I gather that it is only a winter visitant to these countries. Père David found it common in North China in all stages of plumage, the adult birds being, however, the less numerous. In the Nearctic Region it is found in the summer season in what formerly was Russian America and in the British Possessions, and migrates southward in winter to the Southern States. It appears to be common throughout the Hudson's-Bay territory, is recorded in the Faun. Bor.-Am. as found on the Saskatchewan, and was found commonly on the Mackenzie by Mr. Ross. I frequently observed it in New Brunswick during the autumn and winter, but do not think it remains there to breed. In the winter it was found abundantly by Dr. Coues in North Carolina from October to April; but I never observed or heard of it in Texas when I was there, though I found the Goosander in that State. On the west coast it was found by Mr. Bannister commonly at St. Michael's, in Alaska, during the summer, and was the only species of *Mergus* noticed by him there at that season; and Mr. Dall received it from Sitka and Kadiak through Bischoff, and killed one in May near Nulato, and several at St. Michael's in July. He also found six nests on a small island in the Yukon. How far south it is met with on the west coast I cannot say; but it is recorded from California.

The present species may be met with both on the sea-coast and also frequenting fresh water, and is not unfrequently found in lakes and rivers, especially in the latter where they flow into the sea. In the Gulf of Bothnia, where the sea is fresh water, I found it extremely common in the summer season, frequenting the coasts, and less seldom on the inland lakes, but usually in places where the forests extended down to the shores, and frequently in localities where there are reeds or dense herbage, as is frequently the case on portions of the coast. It is a wary and shy bird, soon taking alarm, and not easy to approach within range; but I often obtained them when out very early in the morning about sunrise, when they appeared less shy than otherwise. It is a very expert diver; and on the coast of New Brunswick I observed them fishing in flocks at the entrance of a small bay, and evidently driving the fish before them, as they formed a sort of cordon round the entrance to the bay, some diving, whilst the others remained on the surface. When pursued or threatened with any danger, it usually seeks safety by diving in preference to trusting to its power of flight. It flies with great swiftness; and I observed, when one passed at full speed near my hiding-place in the rocks, that it made a whistling sound with its wings, easily heard even at some little distance. It feeds on fish of various kinds, which it catches with great facility whilst diving. Sand-eels, freshwater eels,

small fish of various kinds, larvæ of water-insects, worms, and, it is also said, to some extent frogs form its staple food. All I have shot appeared to have been feeding on fish only.

The breeding-haunts of this Duck are the northern portions of both the Palæarctic and Nearctic Regions, especially (as far as Europe is concerned) Scotland, Scandinavia, and Northern Russia. It usually places its nest on the ground, in quiet unfrequented places amongst the low bushes or rank herbage; occasionally it is found in the hollow of a tree. I possess a nest, which is now before me, and which is composed of moss, fine grass-bents, and a few small pieces of twigs well felted together and intermixed with down. The eggs, from eight to twelve in number, are usually deposited late in June, or sometimes rather earlier than that. I have a fair series in my collection, one clutch consisting of twelve eggs, which are dull stone-drab, or creamy buff with a greenish grey tinge, and measure from $2\frac{2}{40}$ by $1\frac{30}{40}$ and $2\frac{2}{40}$ by $1\frac{34}{40}$ to $2\frac{30}{40}$ by $1\frac{32}{40}$ and $2\frac{26}{40}$ by $1\frac{28}{40}$ inch.

As with all the Ducks, the down is invaluable in assisting to authenticate the eggs; and I may therefore state that the down of this species is light grey with a bluish tinge, the centres being almost white, and the tips greyish white.

The specimens figured are the male in winter dress and the adult female above described, and are in my collection.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂. Archangel, June 16th, 1874 (*Piottuch*). *b*. Leadenhall Market, London, November. *c*, ♀. Archangel, May 14th, 1874 (*Piottuch*). *d*, ♂, *e*, *f*, ♀. Amoy, February 1867 (*R. Swinhoe*). *g*, ♂. Little Musquash Harbour, Bay of Fundy, April 14th, 1862 (*H. E. D.*).

E Mus. Howard Saunders.

a, ♀. Albufera de Valencia, November 23rd, 1871 (*R. Martin*).

E Mus. J. H. Gurney, jun.

a, ♂. Filey, Yorkshire, November 5th, 1868 (*D. Brown*). *b*, ♂. Belford, February 26th, 1868 (*Pape*). *c*, ♂. Baltasund, Shetland, May 6th, 1868 (*Saxby*).



J.G Keulemans del

Mintern Bros imp

SMEW.
FEMALE AND YOUNG



J.G.Keulemans del

Mintern Bros imp

SMEW

MERGUS ALBELLUS

MERGUS ALBELLUS.

(SMEW.)

Merganser cristatus minor, Briss. Orn. vi. p. 243 (1760).
Merganser stellatus, Briss. tom. cit. p. 252 (1760).
Mergus albellus, Linn. Syst. Nat. i. p. 209. no. 5 (1766).
Mergus minutus, Linn. tom. cit. p. 209. no. 6 (1766).
Mergus albulus, Scop. Ann. I. Hist. Nat. p. 71. no. 91 (1769).
Mergus pannonicus, Scop. tom. cit. p. 72. no. 92 (1769).
Merganser albellus (L.), Bodd. Table des Pl. Enl. p. 27 (1783).
La Piette ou le petit Harle huppé, Buffon, Ois. ix. p. 164 (1784).
Le Harle étoilé, Buffon, tom. cit. p. 166 (1784).
Mergellus albellus (L.), Selby, Cat. Gen. & Subgen. of Birds, p. 47 (1840).

Le petit Harle huppé, French; *Der kleine Säger*, German; *Pesciajola*, Italian; *Serra*, Maltese; *Nonnetje*, *Scheft*, Dutch; *Nonne-Hvidskrække*, Danish; *Hvid Fiskand*, Norwegian; *Salskraken*, *Salknipan*, Swedish; *Uinilo*, *Uivelo*, *Ungilo*, Finnish; *Krahal-Lutok*, *Paganka*, Russian.

Figuræ notabiles.

D'Aubenton, Pl. Enl. 449, 450; Werner, Atlas, *Palmipèdes*, pl. 62; Kjærb. Orn. Dan. taf. 50; Frisch, Vög. Deutschl. taf. 172; Fritsch, Vög. Eur. taf. 47. figs. 2–13; Naumann, Vög. Deutschl. taf. 324; Sundevall, Sv. Fogl. pl. lxiv. figs. 5, 6; Gould, B. of Eur. pl. 387; id. B. of G. B. v. pl. 36; Schlegel, Vog. Nederl. pl. 321; Roux, Orn. Prov. pls. 355–356; Audubon, B. of Am. pl. 414; Wilson, Am. Orn. pl. 91. fig. 4; Gray, Gen. of B. pl. 170. fig. 2.

♂ *ad.* albus, loris, regione ophthalmicâ et maculâ magnâ nuchali nigris, dorso centrali et lineâ ad basin lateralem colli utrinque nigris: primariis nigris vix griseo tinctis, secundariis nigris albo terminatis, secundariis intimis sordidè cinereis: scapularibus (intimis exceptis) albis nigro apicatis, intimis fulvescenti-cinereis: tectricibus majoribus nigris albo apicatis, medianis albis, et minoribus nigris: uropygio nigro, supracaudalibus brunnescenti-cinereis sordidè albido apicatis, caudâ sordidè brunneâ vix cinereo lavatâ: hypochondriis nigro transversim vermiculatis, corpore laterali utrinque ad basin alæ maculâ nigrâ notato.

♀ *ad.* capite suprà, nuchâ et collo postico saturatè rufis: loris et regione ophthalmicâ nigricanti-rufis: dorso, tectricibus alarum, et uropygio fusco-cinereis, hôc saturatiore: alis ut in mare, sed sordidioribus, secundariis intimis et scapularibus dorso concoloribus: gulâ et gutture superiore cum corpore subtùs albis, gutture imo cinereo: pectore superiore et hypochondriis pallidè cinereo lavatis, his brunnescente cinereo marmoratis: rostro et pedibus ut in mare coloratis sed sordidioribus: iride rufescenti-brunneâ.

Adult Male (Archangel, 16th May). Lores, a large patch round and behind the eye, and a large nuchal patch jet-black, rest of the head, neck, and underparts pure white, feathers on the crown and upper part of the nape elongated, forming a crest; centre of the back and a narrow line on each side of the upper part of the breast jet-black; primary quills black, tinged with greyish brown towards the tip, secondaries jet-black, tipped with white, except the inner ones, which are dull ashy; scapulars white, tipped with black, except the inner ones, which are greyish brown or blackish; primary coverts black, tipped with white, median coverts white, and smaller wing-coverts black; rump blackish, fading into dull greyish brown on the upper tail-coverts, which are tipped with dull brownish white; tail dull brown, with a greyish tinge; flanks narrowly vermiculated with black, and a black mark close to the base of the wing on the sides of the body, the feathers there being tipped with black; bill pale bluish, nail lighter; iris silvery white; legs light bluish lead, the webs darker. Total length about 16½ inches, culmen 1·25, wing 7·6, tail 3·8, tarsus 1·3.

Male in summer. I do not possess the bird in that stage of plumage (resembling the dress of the female) which it assumes when the female has commenced the duties of incubation; but Naumann says that it very closely resembles the female, but may be distinguished by having the eye greyish white, the upper parts darker, the patch on the side of the head round the eye being black, by the black semilunar mark on the side of the breast, and the patch at the base of the wing being present, though not clearly defined.

Old Female (Moscow). Crown, nape, and back of the neck reddish brown, the feathers on the hinder portion of the crown and nape rather elongated; on the fore part of the crown a few whitish feathers; feathers in the region round the eye darker brown and intermixed with blackish brown feathers; back and upper parts generally dark brownish ashy slate, becoming blackish on the lower part of the back, most of the feathers on the fore part of the back tipped with light ashy grey; wings in general character like those in the male, but duller and with very much less white, inner secondaries and scapulars like the back; throat, fore neck, and underparts white; upper part of the breast clouded with pale slate-grey; flanks washed and slightly marbled with greyish brown; legs and bill as in the male, but duller; iris dark reddish brown.

I at first thought that this specimen might possibly have been wrongly sexed, as it has some whitish feathers in the head; but it is clearly an adult bird, and does not agree with the description of the adult male in summer plumage, and I can only look on it as a very old female.

Adult Female in winter (Leadenhall Market, London, December). Similar to the bird last described, but with the head purer in colour, the dark reddish brown colour being unmixed, without any white feathers; lores and space before the eye blackish brown; back and upper parts much clearer in colour; the fore part of the back clear bluish ash in tinge; lower part of the neck all round dark ashy grey, slightly intermixed with brown, and the upper part of the breast washed with pale ashy grey.

Young in down (Kimschensk, Russia, 18th June). Upper parts, including the sides of the head below the eye, but only the back of the neck, dark blackish brown, darkest on the crown and the lower part of the back; at the base of the wing-joint a white spot, and another close to it, but rather lower down the back, and on each side of the rump another white spot; below the eye a very small white spot; underparts white; breast and flanks pale greyish or sooty brown.

One young bird, which can only be two or three days old, has the bill so slightly serrated that the serrations can only be seen when very closely looked into; but another, which is a few days older, has the serrations very distinct.

The Smew, or Nun, as the present species is also called, inhabits the northern and north-eastern portions of Europe and Asia, only migrating southward into the central and southern countries during the winter season.

With us in Great Britain it is a tolerably rare straggler, occurring at irregular periods on our coasts or on inland waters during the winter season; and, so far as I can gather, it appears to occur more frequently on our eastern than on our western coasts. In Scotland, according to Mr. Robert Gray (B. of W. of Scotl. p. 397), it "is found only at irregular intervals. It has been shot repeatedly on Loch Lomond; and Mr. Elwes informs me that in Islay it is a very rare winter visitor. In the southern counties it has occurred in Kirkcudbrightshire, Dumfriesshire, and Wigtownshire. A male was killed on Castle-Kennedy Loch, near Stranraer, in March 1855, as I have been informed by the Rev. G. Wilson, Glenluce. It may be remarked that in every case the specimens were procured either on rivers or freshwater lochs. The most recently killed examples of this handsome species which I have examined were obtained in the winter of 1868—one, a female, on Loch Lomond, on 10th January, the other, a fine male, in Islay, in February last.

"On the east of Scotland the Smew has been much oftener observed, and has been met with more frequently, perhaps, in East Lothian than in other counties. Nearly all the specimens I have seen or heard of as visitants to that district have been shot in the Tyne estuary, where many years ago I first had an opportunity of examining a newly-killed specimen; it fell to the gun of my lamented friend the late John Nelson, Esq., whose interesting collection contained many valuable specimens of East Lothian birds." In Ireland, according to Thompson (B. of Irel. iii. p. 159), it is a rare visitor to the northern districts, but appears to occur annually in some of the central portions of the island. It has not been recorded from the Færoes, and does not appear to be common on the Norwegian coast, where Mr. Robert Collett says that it occurs now and then during the winter season on the southern portions of the coast; and Nilsson writes that it is rather rare on the Swedish coast, arriving in December and leaving in March, arriving singly or in pairs, and sometimes found in the rivers tolerably far inland. In Finland, Dr. Palmén (Finl. Fogl. ii. p. 546) says, "it is tolerably rare, and breeds sparingly in the northern and eastern districts. It is not known from the localities near the coast; but according to Fellman it is rare at Enare during the breeding-season; and Grape also speaks of it as being rare at Enontekis. Wolley says that it is not rare in the Muonio district, especially in a marsh through which the Jerisjoki flows—and that where the Palojoki flows into the Muonio river there is an island called Ungilonsaari, after this bird. . . . Soldan sent a number of eggs to the University Museum from Kittilä, probably a full clutch. At Pudasjärvi it occasionally breeds, but is commoner in the spring, and is rare at Kuusamo. Malmgren states that it breeds at Piispajärvi, in Kianto (65° N. lat.); and Kessler says that he found a family of them on the Sun River, a little below Küwatsch, in 62° 15′ N. lat., in Onega-Karelen, and further states that the peasants told him that this bird affects the swiftest streams. During migration it occurs in other parts of the country; it has been twice observed near Kuopio in the spring, in company with Golden-eyes, and has been occasionally obtained near Helsingfors, as also on Öland. It appears on the southern coasts late in April or early in May." It appears to be not uncommon, and breeds, in Northern Russia. Meves saw a female with a family of young ones about one third grown, on

the 20th July, at Nischmosersk, in 64° 5′ N. lat., but did not succeed in obtaining any of the young ones, as they dived and concealed themselves amongst the rushes. Mr. Sabanäeff informs me that it is commoner than either of the other Mergansers in the Governments of Moscow and Jaroslaf during the seasons of migration. Eversmann and Bogdanoff say that it is common in the Governments of Kazan, Orenburg, Saratoff, and Simbirsk; and Sabanäeff found it breeding on the borders of the lakes in the black-earth districts of the Ural. Mr. Jacovleff says that it breeds very numerously in the neighbourhood of Astrachan, but is only met with near Sarepta during migration.

It visits the coasts of Germany during the winter season, and is also found far up the country on the rivers and lakes, but is much rarer than either the Goosander or Red-breasted Merganser. Mr. Wiese says (J. f. O. 1867, p. 83) that a pair were killed on a lake in a wood near Greifswald early in May, and that a few days later a nest containing eggs was found in a hollow tree, which he believes might be the eggs of this species, as they were small and neither so yellow as Goosanders' eggs nor yet so greenish grey as those of the Merganser; but much better evidence is, I think, necessary before it can be surmised that the species has bred in Germany. It is said to occur sparingly on the Elbe and Rhine during the winter, and also visits Denmark during the two seasons of migration, but does not appear to be at all numerous. In Belgium it is common during winter in the marshes north of the Campine, and is also met with on the rivers. It is found on the Dutch coast every winter, but is not numerous; and Baron von Droste Hülshoff says that it is often obtained on the Island of Borkum, where, however, it does not appear until severe frosts set in, and becomes somewhat commoner in February and March. It is a winter visitant to the northern coasts of France, and has also been met with in Provence. Professor Barboza du Bocage includes it with a query in his list of the birds of Portugal; but Mr. Howard Saunders (Ibis, 1871, p. 37) says that it occurs in Spain during the winter, especially at the Albufera. Passing eastward again, I find it recorded as occurring during the cold season on the lakes and rivers of Savoy; and it is likewise a tolerably numerous winter visitant to Italy and Sicily, rarer, however, in the latter country, and usually seen in immature plumage; and Mr. A. B. Brooke (Ibis, 1873, p. 345) speaks of it as being in Sardinia "of not uncommon occurrence in winter." Mr. C. A. Wright, who records its occurrence at Malta, says (Ibis, 1864, p. 291) that "during some extraordinarily bad weather which prevailed about the middle of January last, a good many Ducks of various kinds, and Teal, were driven on the island by the severity of the weather—and amongst them a number of *Mergus albellus* (an exceedingly rare bird in Malta), of which I obtained an adult female and several young birds, also females. Male Smews seem to be universally scarce;" and he further says (Ibis, 1870, p. 492) that "a fine adult male was obtained in the winter of 1868, and preserved for the University Museum; and at the same time one or two females were shot." Lord Lilford found it common in February and March in Epirus; and Messrs. Elwes and Buckley speak of it as numerous in Macedonia, where it frequents inland waters and deep still streams which intersect the marshes; and they all remark that but very few adult males are ever seen there. Both Lindermayer and Von der Mühle speak of it as being commoner in Greece than either *M. merganser* or *M. serrator*; and the latter says that it is almost as numerous as the Golden-eye, in the company of which species it is usually seen, and is exceedingly tame and fearless.

Dr. Anton Fritsch (J. f. O. 1872, p. 372) says that females and immature birds are to be seen every winter in the markets of Southern Germany; and Von Nordmann speaks of it as common on the coasts of the Black Sea, in Southern Russia, during severe winters. It doubtless occurs in winter in Asia Minor; and Canon Tristram (Ibis, 1868, p. 328) says that he once obtained it on the coast of Palestine. I cannot find any instance of its occurrence in North-eastern Africa, though it is found in the north-western portion. Loche says that it is a rare and irregular winter visitant to Algeria during severe seasons; and Colonel Irby records its occurrence at Tangier, where, he tells me, only immature examples have been met with.

To the eastward it is found through Siberia to Northern China and Japan. Severtzoff (Turk. Jevot. p. 70) says that it visits Turkestan in the winter, but leaves early in the spring. It occurs throughout that country, excepting in the south-eastern districts, and is met with as high as 4000 feet in the lakes in the mountains. Both Dr. Radde and Dr. L. von Schrenck record it from Eastern Siberia; and the former says (Reis. im Süd. von Ost-Sib. p. 379) that "as early as March small flocks were seen at Tarei-nor, the freshwater lakes near Kulussutajeffsk being then covered with ice. In the Bureja Mountains I saw the first flock on the evening of the 25th March, and the second on the 2nd April. They remain here for long during migration, but seldom breed in South-eastern Siberia. On the 12th May I saw some old males in full breeding-plumage on the Irkut." Dr. von Schrenck writes (Reise Amurl. p. 486), "it appears to be rare in the Amoor district. I obtained one specimen in autumn 1854, the 2nd [14th] October, on a small lake near the Nikolaieffsk post. Later on, when this river was covered with ice, I saw another flock swimming about on a small unfrozen portion of the river; they do not leave these places until all the water is covered with ice. On the Upper Amoor I oftener met with this species, sometimes in flocks, and sometimes alone. I shot one on the 12th [24th] September in the neighbourhood of Albasin, and on the 18th [30th] September one near the mouth of the Oldoi; both specimens were in immature plumage." Dr. Dybowski says (J. f. O. 1868, p. 339) that it occurs near Darasun, in Dauria, during migration. Père David speaks of it as being abundant in North China; and Mr. Swinhoe (P. Z. S. 1871, p. 416) states that it is "common on the Yangtsze in winter;" and he also records it from Talien Bay, and as being abundant in the markets during the winter season. Messrs. Temminck and Schlegel say that it is frequently obtained in Japan, and that their collectors killed numbers there. It ranges during the cold weather down into Northern India; and, according to Dr. Jerdon (B. of India, ii. p. 819), "it has been killed near Cuttack, in Oude, is said not to be rare near Delhi, and has been met with in Sindh." Col. Irby (Ibis, 1861, p. 251) says that it is occasionally seen in Oudh and Kumaon in January and February in small flocks of from three to seven individuals; and Mr. A. O. Hume (Stray Feathers, i. p. 265) speaks of it as being "as rare in Sindh as it is elsewhere in Upper India. I saw one party on the banks of the Jhelum, near Jung, and shot a specimen, a young male; and I saw it again on the banks of the Indus, near Kussmore; and, lastly, I saw several parties on the Muncher Lake. These were the only occasions on which I met with it, though the black and white plumage of the male is so conspicuous that the bird can never be overlooked." It is said to have occurred in America; but it appears doubtful if it should be included in the fauna of that country. Professor Baird says (B. of N. Am. p. 817) that "its existence in America is based upon a female bird found at New Orleans by Mr.

Audubon. No one else has ever met with it; and this single straggler (in respect of which Mr. Audubon may have even been mistaken) can hardly warrant its being considered an American bird. Wilson, in speaking of the abundance of the Smew in the Northern United States, probably had the Butterball (*Bucephala albeola*) in view."

In its habits the Smew resembles the Red-breasted Merganser, but appears much fonder of fresh water than that species, being frequently met with in rivers, inland lakes, estuaries, &c. It flies with great rapidity, and is an exceedingly expert diver, remaining below the surface for long, and darting about under water with the greatest swiftness and ease. I have often watched one kept in confinement at the Zoological Gardens in this city, diving in the tanks after small fish, and been astonished at the quickness with which it propels itself under water. It feeds on small fish and marine animals of various sorts, as well as small frogs and various species of water-insects. In the fresh water it devours large numbers of young fish, especially the young of the trout and the eel; and Naumann says that it feeds on sand-eels, small fish, on *Crangon vulgaris*, *Athernia hepsetus*, &c. &c. During the breeding-season it inhabits lakes and rivers, never appearing to be met with on or near the sea-coast at that season of the year. For long the breeding-habits of the present species were enveloped in utter obscurity; and, indeed, until the late Mr. Wolley discovered its breeding-haunts and obtained its eggs in Lapland, no one appeared to know whether it placed its nest on the ground or in a tree; in fact Temminck says that it breeds on the borders of lakes and rivers. Mr. Wolley published a detailed account of his discovery in the Ibis (1859, pp. 69–76), which, as it is the only authentic and full account of the nidification of the present species, I will offer no apology for giving *in extenso*, as follows:—

"The first year I was in Lapland, 1853, it was important for me to find out the native (that is, the Finnish) names for the birds of the country. Of the Ducks generally I soon learnt to understand to which species each name referred; but there was one called *Ungilo*, concerning which I was for a long time in the dark. It was described as breeding in the holes of trees, or in *tyllas* (that is, nest-boxes). It was a smaller bird than the *Sotka* (Golden-eye), but was able to turn that bird out of its hole, if it wanted it for itself; though some accounts told the reverse story. It had formerly been found not unfrequently on the Muonio river, and especially on the lakes through which the little Jeris-joki runs. On the former river, a little above the inlet of the Palo-joki, there is even an islet called after it, Ungilon-saari, on which, though there are still tyllas, the bird has not been known for a good many years. In the course of time I learned that the bird had a beak like a *Koskilo* (Merganser); and the colours of the male were described to me in a way that left no doubt it was the Smew. Still it required some selection of evidence to hold the opinion firmly; for instance, a woman talking to me imitated the cry of the bird, in doing which she used the syllables 'u-u-ungel' with the music of the spring call of the Long-tailed Duck, and by her subsequent description clearly showed that that was the bird she meant, though it is usually known by quite another name, identical with, and perhaps borrowed from, the Swedish, *Alle*. This suggested to me that the name *Ungilo* may have been originally applied to the Long-tailed Duck, inasmuch as we find, in Ström's 'Description of Sandmör,' that the Long-tailed Duck is called *Angle-mager* (Hook-maker) on parts of the Norwegian coast, doubtless from its cry, connected with the time of its appearance, when the sea-fishing begins.

"Nothing is more common than one and the same name being applied to different birds in

different districts. Even this very name *Ungilo* is used for the Goosander in certain places on the Upper Torneå river.

"Concerning the egg of *Ungilo* I made every inquiry. All the people who remembered it on the Muonio agreed that it was much less than the Golden-eye's, and was liable to be found in the same hole with eggs of that bird. As a consequence of this popular belief, I often had dwarf eggs of *Sotka* brought to me for *Ungilo's*. From one trustworthy man, Piko Haki, I heard that some ten years before he had found a nest and taken the eggs on sale for eating to a resident trader, who had asked him where he had got Hens' eggs. Now Hens' eggs are unknown in the interior of the country, where I was; but at Uleåborg, where the trader had been familiar with them, they are about the size of our Bantam's eggs. This gave me the best indication I had yet met with of the probable appearance of the egg; and I told my servant-lad Ludwig in confidence that, when we at length should get *Ungilo's* eggs, they would be very like Wigeon's, though probably more white. Of course this was not to be talked of, as it might lead to attempts at imposition. It is possible that the small comparative size of the *Ungilo's* eggs, and the habit of the bird turning out the Golden-eye, had made it little liked by the people, and that they used to catch it on the eggs and kill it, as they do Hawk Owls and Tengmalm's Owls.

"However that may be, year after year passed by, and I never once, out of the tens of thousands of duck-like birds that came under my notice, caught sight of a Smew. In time I came to hear from people who came from the Sodankyla district, a good way to the east of Muonioniska, that *Uinilo*, as it was there called, bred at more than one lake in that neighbourhood. In 1856 I sent a very clever Lap, Martin Pekka, to this quarter for the egg-season; but he could not meet with *Uinilo*.

"In 1857 the clergyman of Muonioniska, Priest Liljeblad, had been transferred to Sodankyla; and in the spring of this year an intelligent young man, Carl Leppajervi, went from Muonioniska to be assistant schoolmaster with his former teacher. I gave Carl strict charge to make every inquiry for *Uinilo* in that part of the world and of travellers from Kemi Trask. One day (the 30th July 1857), as I passed by the homestead of Regina's Calle, the famous steerer of the Muonio Falls, there was given to me a wooden box, such as is used in the country for carrying butter on a journey, addressed 'To the English gentleman Joh Woleg in Muoniovaara.' The box was not tied nor secured in any way; and on the lid being opened, there first appeared a well-written Finnish letter, of parts of which the following is an exact translation:—

"'Matthias Lasko of Made-koski-kyla, on the Kitinen-joki, five miles [Swedish] from Sodankyla, has found on the Liesi-joki eggs of Uinilo, and has brought to me three eggs, on which is written a number like this.' [Here follows a facsimile of the figure 1 on the eggs. It appears from Hermelin's map, that the Kitinen-joki, of which the Liesi is doubtless a tributary, runs into the Kemi-joki a little north of Sodankyla.] 'They were found on the 8th day of the summer-month [June] 1857. Of an old birch trunk the wood was rotted away, and it was left hollow, forming a hole in which they were.' [The expression used involves the idea of the trunk being still standing.] 'There were two men in company; and the other man has given four eggs to the priest: there were seven of them; but there was no down brought. . . . . The Uinilo was also killed; and with the eggs it too is sent.—Carl Leppajervi. First day of the Hay-month [July]

1857. And the priest will send the four Uinilo's eggs, if you send him four eggs of Kuukili' (*Garrulus infaustus*). 'This Uinilo was taken to the priest, and he wants for it 20 copecks.'

"The next, or probably the first thing in the box that struck my eye, was a stiff-necked skin of a female Smew, with hatching spots on its underside; then I came to five or six much-injured eggs of Greenshank and other birds; and lastly, at the bottom of all, well-wrapped in tow, were the three Smew's, blown each with two holes, which I afterwards found it safe to round off with a drill. The eggs rather staggered me at first sight, they were so like Wigeon's. From time to time I held consultations over them. On comparing them with a series of something like fifty Wigeon's eggs, I found that they were pretty nearly of the same size, though rather below the average. They were flattened at the small end more than any of the Wigeon's, and they had less of the yellowish tinge about them, so that persons not much used to eggs could pick them out of the lot; but all these peculiarities might be accidental, though it seemed remarkable that any woodsman trying to pass off Wigeon's eggs for Smew's should have been able to find so abnormal a nest. But it was not very long before I satisfied myself that there was a decided difference of texture. This could be perceived on an ordinary examination; but it became very striking on exposing the egg to direct sunshine and examining the penumbra, or space between full light and full shadow, with a magnifying glass—the sharp '*mountainous*' structure of the Wigeon's egg was strongly contrasted with the lower and more rounded character of the elevations in the Smew's. It is my intention to endeavour to illustrate this with the help of photography. Further, I tried the sense of touch: scratching the egg with the most sensitive of my finger-nails I could at once perceive the greater roughness of the Wigeon's. Ludwig, though his hand was by no means of the finest, did not make a single mistake in some ten trials with his eyes shut of various Wigeon's eggs and the supposed Smew's; and one or two other people were equally successful. I now felt no doubt that I had true eggs of the Smew. The ivory-like texture of the Goosander's egg was a pretty parallel to the character of the Smew's.

"In the mean time, on August 4th, I sent a letter to Pastor Liljeblad, accompanied by a box with four beautiful eggs of the Siberian Jay, packed as eggs should be packed, and enclosing money, amongst other uses to pay for a thoroughly trustworthy man to travel to Made-koski-kyla, to inquire into the particulars of the capture of the Smew and its eggs, to himself visit the birch-trunk, and to bring away the down which would be lying at the bottom of the hole. I also wrote to Carl Leppajervi. In a month after I wrote, I hoped an answer might arrive; but I was disappointed, and I was obliged to leave Muoniovaara for England on the 11th of September. I had not been very long in England when I received a letter enclosing communications from Pastor Liljeblad and from Carl Leppajervi, which had arrived at Muoniovaara on the 16th of September, and also enclosing a specimen of the down, which my agent had picked out of the heap of touch-wood sent with the letters from Sodankyla.

"The priest told me in Swedish that he had asked me for the eggs of the Siberian Jay, only because he had for many years promised a friend in the south to do his best to procure them, and that the only chance left for him was to get them of me—he had been so many times wilfully deceived by the country people,—that he now sent me the four *Uinilo's* eggs, which had been brought to him. He added, in answer to a question of mine, 'I think that the men who

came with them, if not exactly of the best-behaved sort, are at least so far to be trusted that they brought the true ones. Kalle went at once to Made-koski.' Kalle's letter said in Finnish, 'I have been to Made-koski for the Uinilo's down; but there was not much of it there. The birch stump was open at the top; and who knows but the wind may have carried some of the down away? Matthias Lasko took away a little from what I have sent, to see if he could make out himself that it was Uinilo's. That Uinilo was caught actually from the top of those eggs; indeed it is true. . . . . I saw that in that birch stump there had at some other time been eggs; for there were old pieces of egg-shell. Written 29th of Harvest-month (August) 1857.—Karl Leppajervi.'

"I was told by my man in Lapland that these four eggs had been blown with only one hole, sufficiently well made, but that a great part of the yolk had been left inside. They were also stained outside; but he had cleaned them out, rounded the holes with a drill, and made a good job of them. The down sent to me I found to agree generally with that on the body of the female Smew; but I did not make a careful examination, and I have not yet made it.

"At the end of October 1858 I received these other four eggs. I found that the character which I had previously observed, but which I had originally seen on only one of the first three, was common to all the other four, namely that shown by the presence of a thin calcareous covering outside the egg-shell proper, apparently of the same nature as that which is so conspicuous in the egg of the common tame Swan. Some attempts had been made in Sodankyla, as my man told me, to scrape this off.

"The following are the dimensions in two directions, with some description, of four eggs which are now before me, picked out of the six which remain in my possession out of the nest of seven:—

	Greatest length.	Greatest breadth.
"1st egg	2·04 inches	1·52 inch.
2nd egg	2·05 „	1·47 „
3rd egg	2·04 „	1·43 „
4th egg	2·04 „	1·42 „

"Of the first egg the widest part is exactly halfway down; but in one direction the inferior fulness of the curve points out which is the small end of the egg—though, were there cut out of the middle of each end a piece of the shell bounded by a circle of a quarter of an inch in radius, I think, as the pieces lay upon a level surface, the piece from the small end of the egg would be found less elevated than the other piece. In other words, the small end of the egg is even more flattened than the large end, though the flattened area there is not so extensive as that of the large end.

"Of the second egg the conjugate diameter is nearer to the large end than it is to the small end, the proportion of the distances being as 9 to 10. The curve towards the small end is less suddenly changed than in the egg last described, though still the present egg is very broad at the small end.

"The third egg is equally flat at the small end with the second; but it is rather less curved from the broadest part to the commencement of this flat end.

"The fourth is still narrower than the last, before the flatness of the small end commences.

"I have previously alluded to the texture and the colour of these eggs.

"I have seen a MS. list of birds from the German naturalist Herr Hoffmansegg, then resident in Archangel, from which it appears that *Mergus albellus* occurs in that neighbourhood, which is considerably more southerly than Muonioniska, or Sodankyla. As I did not hear of it on the north or north-east coast of Norway, and as it is not known to breed in Sweden, I should be inclined to suppose it generally an eastern and northern bird.

"It is worthy of note, that the very pale colour of the down of the Smew seems to be connected with its choosing holes for breeding. No bird of the duck kind that has white down, as far as I know, places its eggs in an exposed situation.

"The Goosander, Golden-eye, Sheldrake, birds differing much from one another, have all white down, and all lay their eggs in holes of trees when such are to be found, whilst one of them at least has well-coloured eggs."

Mr. Sabanäeff found it breeding in the Ural; and, as above stated, Mr. Jacovleff says that it breeds numerously near Astrachan. I possess eggs from the Ural, collected by Mr. Sabanäeff, and also two of those collected in Lapland by Dr. Soldan, and sent to the Museum at Helsingfors. All these eggs closely resemble those of the Wigeon, but can be distinguished by their smoother and more polished surface.

The specimens figured are an old male in full plumage and a very old female; and on an extra Plate I propose figuring the old female obtained with the eggs by Mr. Wolley, which I trust to receive from the Norwich Museum for that purpose in a few days, and shall figure with it the young in down received from Mr. Sabanäeff.

In the preparation of the above article I have examined the following specimens:—

E Mus. H. E. Dresser.

a, ♂. Norfolk coast, March 1855 (*A. F. Sealy*). *b*, ♂ *ad.* Dutch coast, December 1870. *c*, ♂ *ad.* Cuzniechiha, Archangel, May 16th, 1873 (*Piottuch*). *d*, ♀? Near Moscow (*Dode*). *e*, *f*, *pulli.* Kimschensk, Russia, June 18th, 1872 (*Sabanäeff*).

E Mus. Lord Lilford.

a, ♂, *b*, ♀. Leadenhall Market, London, December 1872 (*Burton*).

